Before The
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	)	
In re	)	
	)	**CONSOLIDATED DOCKET NO.**
DISTRIBUTION OF CABLE	)	**14-CRB-0010-CD**
	)	**(2010-13)**
ROYALTY FUNDS	)	
	)	

**AMENDMENTS TO ALLOCATION PHASE REBUTTAL CASE OF
THE COMMERCIAL TELEVISION CLAIMANTS GROUP**

In accordance with the Order Continuing Hearing and Permitting Amended Written Rebuttal Statements, Denying Other Motions, and Reserving Ruling on Other Questions, which was issued by the Judges on January 26, 2018 ("Order"), the Commercial Television Claimants Group ("CTV") hereby submits amended versions of portions of its Written Rebuttal Statements in the Allocation Phase of the 2010-2013 Cable Copyright Royalty Distribution Proceeding. In accordance with the Order, the amendments are related solely to the Corrected Testimony of Jeffrey S. Gray, Ph.D. (filed January 22, 2018) ("January 2018 Gray Report"). The amendments are to the Written Rebuttal Statements of CTV witnesses Dr. Christopher Bennett and Ms. Ceril Shagrin, which were submitted on September 15, 2017.

Dr. Bennett's original written rebuttal testimony addressed the corrected written direct testimony submitted in this proceeding by Dr. Gray on April 3, 2017("April 2017 Gray Report"). The January 2018 Gray Report reflected changes in (1) the scope of the Nielsen data previously used by Dr. Gray, (2) his program categorizations, (3) his use of unweighted household data, and (4) the basic regression approach he followed for his viewing imputations. These changes required Dr. Bennett to update the analyses he presented in his original rebuttal testimony, and

the updates are reflected in numerous places throughout his rebuttal testimony. In addition, Dr. Bennett presents an analysis addressing Dr. Gray's change in his basic regression approach in a new Section VI.G. of his written rebuttal testimony.

Ms. Shagrin's original written rebuttal testimony also addressed the April 2017 Gray Report, and required updates to reflect the changes included in the January 2018 Gray Report. In particular, the January 2018 Gray Report purported to accept a criticism of Dr. Gray's original analysis regarding his use of unweighted Nielsen data, which was pointed out in the rebuttal testimony of Ms. Shagrin and other experts. Ms. Shagrin's amended written rebuttal testimony has been modified to address this change.

Attached are Amendments to the Written Rebuttal Testimony of Dr. Bennett and Ms. Shagrin, along with redlined copies showing the corrections to their original Written Rebuttal Testimony.

Respectfully submitted,

COMMERCIAL TELEVISION CLAIMANTS
NATIONAL ASSOCIATION OF
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February 12, 2018

Before the
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WASHINGTON, D.C.

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In the Matter of   )

)   **CONSOLIDATED PROCEEDING**

Distribution of Cable Royalty Funds   )   **No. 14-CRB-0010-CD (2010-13)**
_____)

REBUTTAL TESTIMONY OF CHRISTOPHER J. BENNETT, PhD

September 15, 2017

Amended February 12, 2018

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I. Background

(1) I am a Principal at Bates White, LLC, an economic consulting firm with offices in San Diego, CA, and Washington, DC. Other than my new position at Bates White, my educational background, experience, and credentials were presented as part of my Written Direct Testimony submitted in this proceeding on December 22, 2016.

(2) Staff at Bates White under my supervision assisted me with the preparation of this rebuttal analysis and report.

II. Overview and Scope of Opinions

(3) I was asked by counsel for the Commercial Television Claimants (CTV) to review and analyze the viewing-related studies presented in the Corrected and Amended Testimony of Jeffrey S. Gray, PhD, submitted in this proceeding on April 3, 2017 ("Gray Report"), and in the second Corrected and Amended Testimony of Jeffrey S. Gray, PhD, submitted in this proceeding on January 22, 2018 ("January 2018 Gray Report"). I was also asked to provide analyses of certain program categorizations reflected in survey questionnaires presented by Program Suppliers witness Howard Horowitz and of certain data regarding the cable distant signal marketplace for use by other rebuttal experts appearing on behalf of CTV.

(4) As part of this analysis, I reviewed the Gray Report and January 2018 Gray Report together with Dr. Gray's reliance materials,[1] which include the Testimony of Paul Lindstrom and the Testimony of Jonda K. Martin. I also reviewed the pages from Mr. Horowitz's questionnaires on which he identified programs on WGNA as being within certain program categories.

(5) After reviewing these materials and conducting my own analysis, I have formed the following opinions:

- Dr. Gray's samples are not representative of the populations of distant stations that were carried in each year between 2010 and 2013, because of at least two fundamental errors. As a result, Dr. Gray consistently overstates the volume and viewership of certain claimants' programming while understating the volume and viewership of other claimants' programming.

- Dr. Gray incorrectly assigns numerous programs to the wrong claimant groups.

- Dr. Gray's viewership study is flawed and unreliable because, among other things, he replaced 100% of the actual counts of distant households in the Nielsen sample with his own estimates.

- These fundamental issues with Dr. Gray's samples and with his viewership study, together with other conceptual and methodological issues discussed below, render Dr. Gray's reported royalty shares biased and unreliable.

- Even if relative program viewership actually did provide "a reasonable and reliable measure of the relative economic value of distantly retransmitted programming,"[2] Dr. Gray has not reliably measured relative program viewership.

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[1] Dr. Gray produced underlying materials for both the Gray Report (hereinafter "April 2017 Underlying Materials") and the January 2018 Gray Report (hereinafter "January 2018 Underlying Materials").

[2] *See* Gray Report, ¶ 40.

- Mr. Horowitz's survey questionnaires erroneously identified certain programs within the Commercial Television Category as being "syndicated series" or "other sports" programs within the Program Suppliers Category.

(6)   An explanation of each of these opinions follows below.

III. Overview of Dr. Gray's report

(7)   As I understand it, Dr. Gray undertook to measure the relative amount of viewing by cable households of different categories of programs that aired on retransmitted distant stations.[3] I further understand that Dr. Gray extracted a sample of the distant stations in each year from 2010 through 2013 and provided lists of those sampled stations to Gracenote, Inc. ("Gracenote").[4] Dr. Gray also provided his list of sampled stations to Mr. Lindstrom, along with a list prepared by the Cable Data Corporation ("CDC") showing the counties in which each of the sampled stations was "local" (i.e., not a distant signal).[5] Gracenote then provided Dr. Gray with information in its database, if any, about programs that aired on the sampled stations; and Mr. Lindstrom provided Dr. Gray with information in the Nielsen database, if any, about cable household viewing of programming on sampled stations by quarter hour, with viewing by cable households separated between distant and local viewing.[6] Mr. Lindstrom excluded viewing that was observed during quarter hours in which the programming was not compensable in this proceeding, which I understand includes Big 3 network programming and non-compensable programming on distant signal WGN.[7]

(8)   I understand from their testimony and supporting materials that all of the viewing data provided by Mr. Lindstrom to Dr. Gray was collected in cable households included in Nielsen's National People Meter Sample[8] and that, in the Gray Report, Dr. Gray used unweighted household viewing counts rather than weighted household viewing data that was also provided by Mr. Lindstrom. In the January 2018 Gray Report, which supplants the Gray Report, I understand that Dr. Gray relies on revised viewing data from Nielsen for WGN and on revised lists of claimants' programs for use in his categorization,[9] and that he has also switched to using weighted household data rather than unweighted household data provided to him by Nielsen.

(9)   I further understand that Dr. Gray does not directly include the measured Nielsen distant viewing data provided to him when calculating the volume and share of viewing by claimant category. Instead, he uses the data for local and distant viewing, where it was available, to develop a regression-based model purportedly describing the relationship between local viewing and distant viewing by program

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[3]   Gray Report, ¶ 30.

[4]   Gray Report, ¶ 23.

[5]   Testimony of Paul B. Lindstrom, Dec. 22, 2016, ("Lindstrom Report") at p.4.

[6]   Lindstrom Report at p.4; Gray Report, ¶ 23.

[7]   Gray Report, ¶ 27.

[8]   In his supporting materials, Mr. Lindstrom states that "[t]he current MPAA Local/Distant Viewing exposure is based on Stated Coded viewing in the National People Meter Sample" (PS-2010-13-C-002635-002637.pdf at p.1).

[9]   Dr. Gray includes new program lists in his January 2018 Underlying Materials. See, for example, "Notes on Claimants-Titles To Add-Remove For Jeff (8842257).xlsx", dated May 9, 2017.

category and airing time.[10] Then, in his ultimate viewing share analyses, Dr. Gray relies on distant household counts projected from his econometric model, supplanting all of the actual distant household counts in the Nielsen viewing data.

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[10] Gray Report, ¶ 36, and 37. In the January 2018 Gray Report, Dr. Gray introduces separate regressions for WGN and non-WGN stations. *See* January 2018 Gray Report, fn. 30.

IV. Dr. Gray's sampling design is flawed, and his samples produce biased and imprecise estimates

(10)   In this section, I outline a number of methodological, sampling, and non-sampling errors that directly undercut the reliability of Dr. Gray's samples and calculations.

(11)   As a starting point for this discussion, it is helpful to consider a hypothetical setting that is free of sampling and non-sampling errors. In this setting, Dr. Gray would not have drawn a sample or categorized the programs; instead, he would have had available to him a complete enumeration of all programs, the claimant category to which each belonged, and the households viewing them. That is, Dr. Gray would have had available to him:

1.   The entire population of the programs that aired on each distantly retransmitted station, and the correct identity of the claimant category to which each program belonged

2.   The entire population of the distant households that viewed each of the programs that aired on the distantly retransmitted stations

(12)   In this hypothetical setting, the measurement of relative distant program viewership is accomplished by counting the number of distant households that viewed the programs within each claimant category. There is no sampling error in this hypothetical setting, since all programs and households are observed and accounted for, and there is no non-sampling error either, since the program information is complete, accurate, and correctly categorized.

(13)   By contrast, Dr. Gray had to contend with both sampling and non-sampling errors because he did not have data for either the entire population of distant signal programs or the entire population of distant households that viewed any of the distant signal programs. Indeed, in place of a complete enumeration of programs, Dr. Gray chose to rely on a sample of program bundles offered on a subset of distantly retransmitted stations. And in place of a complete enumeration of the distant households that viewed each program, Dr. Gray was supplied with viewing data for a sample of households covering some of the programs in his sample—data which he subsequently supplanted with his own estimates.

(14)   Dr. Gray's decision to rely on a statistical sample of programs, the sampling methodology he used, and errors in his implementation of this methodology give rise to errors that undercut the accuracy, precision, and reliability of his estimates of programming volume and viewership. In the remainder of this section, I provide a detailed description of Dr. Gray's sampling methodology, errors in his implementation of this methodology, and the impact that his choice of methodology and these errors had on the accuracy, precision, and reliability of his estimates.

IV.A. Dr. Gray's sampling design is prone to high sampling error and biased samples

(15)   When calculating programming volume and viewership, Dr. Gray relies on a sample of programs. However, Dr. Gray does not sample the programs directly. Rather, he samples stations. As a consequence, he draws into his sample only the programming bundles that were carried on his sampled stations. Specifically, Dr. Gray stratifies stations that were carried as distant signals in each year based on the number of distant subscribers to which they were carried. Dr. Gray then draws a random sample of stations from within each stratum,[11] and, if Gracenote included a sampled station in its database, he includes the programs that were bundled and offered on that sampled station in his sample.

(16)   Dr. Gray's sampling of program bundles (i.e., sampling by station) is an example of cluster sampling. Relative to simple random sampling, cluster sampling is typically a lower-cost option. In this case, drawing a simple random sample of distantly retransmitted programs (by, say, airing date) would almost surely be more costly, as it would likely require program data from Gracenote for each and every station that was carried as a distant signal. By using cluster sampling, however, Dr. Gray is able to reduce the number of stations for which Gracenote data was required.

(17)   The disadvantage of cluster sampling is that it tends to be less precise and more prone to bias than simple random samples of equal size. This is because the individual clusters often contain a non-random and relatively homogeneous set of units.[12] For example, it is well known that students are not randomly assigned to schools but instead generally attend the schools within their neighborhoods. As a result, students within schools (clusters) tend to be similar with respect to socioeconomic status and other characteristics, which means that cluster sampling, by selecting a sample of schools rather than students, tends to give rise to relatively homogeneous samples with high sampling error relative to samples of the same size chosen by other sampling designs.

(18)   This well-known disadvantage of cluster sampling is particularly relevant for Dr. Gray's study, because the programs belonging to claimant categories are often highly concentrated by station type. Indeed, Figure 1 below, which contains the average number of programs by claimant and station type (i.e., Canadian, educational, network, independent, or low power), shows just how sensitive the distribution of programming is to the type of station selected. For example, based on an analysis of Dr. Gray's own data, a single educational station, on average, contributes 12,366 additional Public Television ("PTV") programs to the sample and, hence, over- or undersampling of this station type has a dramatic impact on the volume and share of PTV programming. Similarly, the inclusion (or

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[11]   Gray Report, ¶ 23.

[12]   *See* Paul S. Levy and Stanley Lemeshow, *Sampling of Populations: Methods and Applications*, 4th ed. (Hoboken, NJ: John Wiley & Sons, 2008), 228 [hereinafter "Levy and Lemeshow"].

exclusion) of a single Canadian station in Dr. Gray's data adds (or subtracts) an average of 10,935 Canadian programs. Other claimants' programming is also disproportionately carried on certain station types. For example, Program Supplier programs are disproportionately carried on independent and low-power stations, meaning that over- or undersampling of these station types will have a dramatic impact on the volume and share of Program Suppliers' content.

Figure 1: Average distribution of Gray's categorized programs by station type for 2010–2013.[13]

Station Type	Canadian	CTV	Devotional	Program suppliers	PTV	JSC
Canadian	10,935	20	8	1,605	0	86
Educational	0	0	5	0	12,366	0
Independent	0	1,482	1,170	9,325	0	36
Low-power	0	2,267	787	11,135	0	35
Network	0	2,353	59	3,488	0	6

(19)   As documented in Section IV.D below, Dr. Gray's samples tend to be skewed by station type and therefore also skewed in their representation of claimant minutes. Dr. Gray could have prevented this source of bias and ensured the correct representation by station type in his samples had he included station type as a stratification variable. Instead, Dr. Gray has chosen to stratify only by the number of distant subscribers and, in doing so, actually amplifies the additional sampling variability and potential for bias brought about by his use of cluster sampling.

(20)   To help illustrate this point, consider Figure 2 below, which shows the counts of stations in Dr. Gray's sampling frame by stratum in 2010, along with the number of sampled stations and the sampling weight that Dr. Gray has attached to stations in each stratum. The figure shows, for example, that Dr. Gray samples 22 stations to represent the 632 stations in his bottom stratum, with each of these 22 stations being assigned a sampling weight equal to 28.73 (632/22). Because each PTV station accounts for approximately 12,366 programs, the random selection of a single educational station from among the 632 stations in the bottom stratum will cause Dr. Gray's extrapolated number of educational programs to swing by as much as 355,275 (28.73 × 12,366). Similarly, the random selection of a single Canadian station from among the 632 stations in the bottom stratum will cause Dr. Gray's extrapolated number of Canadian programs to swing by as much as 314,163 (28.73 × 10,935). This same problem was present in each of the years covered by Dr. Gray's study.

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[13]   Note that Figure 1 is based on the program data presented by Dr. Gray, which reflects obvious program categorization errors. For example, his data show CTV programs appearing on Canadian stations and Devotional programs appearing on PTV stations, both of which are incorrect in light of the category definitions and the data analyses I performed in connection with my Written Direct Testimony in this proceeding. Notwithstanding these categorization errors, however, Figure 1 demonstrates that, given the station type disparities that appeared in his own data, Dr. Gray's failure to control for those disparities in his sample selection produces unreliable results.

Figure 2: Distribution of sampled stations by stratum in 2010[14]

Stratum	Sampling frame	No. of sampled stations	Sampling weight
1	632	22	28.73
2	310	23	13.48
3	158	30	5.27
4	110	49	2.24
5	29	29	1.00

IV.B. Dr. Gray's sampling frame is wrong

(21)   A sampling frame is an enumeration of the items from which a sample is selected. Ideally, the sampling frame will be identical to—and therefore representative of—the target population that one seeks to study. When this is not the case, a sample drawn from the sampling frame may not suitably represent the target population.[15]

(22)   In this matter, Dr. Gray's purported target population is the set of programs (by count, minutes, and total viewers) that aired on "all stations distantly retransmitted by CSOs in every royalty year."[16] Yet his sampling frame includes more "stations" than are in his target population. This misalignment between target population and sampling frame—which impacts the reliability of his samples—arose because Dr. Gray failed to expunge a number of duplicate stations from the CDC list of distantly retransmitted stations upon which he relied.[17]

(23)   Dr. Gray's failure to expunge duplicate stations from his sampling frame is evident from Figure 3, which compares the number of stations in Dr. Gray's sampling frame to the number of stations that were actually carried as distant signals in each year from 2010 to 2013.

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[14]   Again, this figure uses Dr. Gray's own sampling frame and sampling weight numbers. As is shown in the following sections, he determines both of these incorrectly in each of the study years.

[15]   *See, e.g.,* David E. McNabb, *Nonsampling Error in Social Surveys* (Los Angeles: Sage Publications, Inc., 2014) [hereinafter McNabb], Chapter 5.

[16]   Gray Report, ¶ 23.

[17]   Duplication is an "error that occurs when the frame list is released without close scrutiny for duplicate entries or when master lists are not checked for accuracy. . . . The main problem with multiple listings is that, when a unit is represented more than once on the frame list, the probability of that unit being selected is different from that of other units in the survey—a violation of the random sample selection procedure" (McNabb, 86). The CDC's list of distantly retransmitted stations reflects the list of call signs as reported by CSOs, and it contains many instances in which different CSOs report different versions of a call sign for the same station (e.g., CBUT and CBUT-DT).

Figure 3: Counts of stations carried as distant signals and in Dr. Gray's sampling frame, by year[18]

Year	Sampling Frame	Population
2010	1,239	1,169
2011	1,338	1,320
2012	1,382	1,370
2013	1,398	1,369

(24) This error is also evident in the list of sampled stations that Dr. Gray reports in Appendix B of his written testimony, an excerpt of which is shown in Figure 4 below. In this excerpt, the Canadian station CBUT-DT shows up twice in Dr. Gray's sample for 2010, first as CBUT-DT and then again as CBUT. The two are simply different designations for the same station, with the same programming.

Figure 4: Partial list of Dr. Gray's sampled stations

2010 Station	2010 Distant Subscribers	2011 Station	2011 Distant Subscribers	2012 Station	2012 Distant Subscribers	2013 Station	2013 Distant Subscribers
WGN-DT	41,361,722	WGN-DT	43,106,794	WGN-DT	42,459,172	WGN-DT	42,522,609
WLIW-DT	743,494	CBUT	966,581	CBUT	868,203	CBUT	893,666
WNET-DT	661,353	WLIW-DT	680,208	WLIW-DT	613,759	WLIW-DT	644,340
WPIX-DT	605,742	WNET-DT	643,737	WPIX-DT	590,292	WPIX-DT	571,383
CBUT-DT	519,880	WPIX-DT	611,976	WBRE-DT	589,716	WNET-DT	516,323
WUAB-DT	502,043	WNBC-DT	443,643	WNET-DT	515,030	CKSH	367,635
CBUT	495,028	WLRN-DT	440,554	WNBC-DT	432,652	KZSW-LP	356,147

Source: Appendix B attached to Testimony of Jeffrey S. Gray, PhD.

(25) Dr. Gray's failure to remove duplicate stations—see Appendix A for a complete list—distorts his count of unique stations, his assignment of stations to individual strata, and the sampling weights that he calculates based on his incorrect station count. The potential effects include the following:

    a. Double-counting some stations in the sampling frame, which changed the likelihood of selection for all stations outside the top stratum; and

    b. Where both versions of the duplicative station were selected, such as for CBUT above in 2010, overrepresentation of the duplicate station in the sample, and the exclusion of a non-duplicate station from the sample; and

    c. Incorrect sampling weights being applied to sampled stations in strata with one or more of the duplicative stations

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[18] For the purpose of this table, a pair of call signs with the following suffixes are treated as the same signal: "No suffix and DT", "No suffix and HD", "DT and HD", "LD and LP", "CD and LP", "CA and CD", and "CA and LP".

IV.C. Dr. Gray's sampling weights are wrong

(26)   As noted in the previous section, Dr. Gray incorrectly calculates his sampling weights based on sampling frames that do not match the population of retransmitted distant stations. In this section, I describe how the errors in Dr. Gray's sampling weights are further compounded by the fact that Dr. Gray has dropped sampled stations that did not have coverage in the Gracenote data.

(27)   Figure 5 below shows the number of sampled stations with Gracenote data by year. In total, Dr. Gray is forced to drop 24 (or 3.9%) of his 609 sampled stations because of missing Gracenote data.

Figure 5: Distribution of sampled stations with Gracenote data

Year	Sampling Frame	Sampled Stations	Sampled Stations with Gracenote Data
2010	1,239	153	145
2011	1,338	153	148
2012	1,382	152	146
2013	1,398	151	146
Total	5,357	609	585

(28)   While Dr. Gray samples 153 stations in 2010, his extrapolation is based only on the 145 stations for which Gracenote data were available. Moreover, the number of dropped stations varied by stratum, which introduced a further disparity due to differential weighting. For example, as shown in Figure 6 below, 22 stations are sampled by Dr. Gray to represent the 632 stations in his bottom stratum in 2010, but only 21 stations—representing approximately 603 of the 632 stations in the bottom stratum—are included in his extrapolations for 2010. Yet Dr. Gray does not adjust his weighting to account for the different number of missing stations across the strata. The impact of this error applies in each of Dr. Gray's station samples, as reflected in Figures 6–9 below.

Figure 6: Distribution of sampled stations by stratum in 2010

Stratum	Sampling frame	No. of sampled stations	No. of sampled stations with programming data	Sampling weight
1	632	22	21	28.73
2	310	23	23	13.48
3	158	30	27	5.27
4	110	49	46	2.24
5	29	29	28	1.00

Figure 7: Distribution of sampled stations by stratum in 2011

Stratum	Sampling frame	No. of sampled stations	No. of sampled stations with programming data	Sampling weight
1	706	20	20	35.30
2	325	21	21	15.48
3	162	23	20	7.04
4	116	60	58	1.93
5	29	29	29	1.00

Figure 8: Distribution of sampled stations by stratum in 2012

Stratum	Sampling frame	No. of sampled stations	No. of sampled stations with programming data	Sampling weight
1	759	19	19	39.95
2	317	17	16	18.65
3	156	20	19	7.80
4	105	51	50	2.06
5	45	45	42	1.00

Figure 9: Distribution of sampled stations by stratum in 2013

Stratum	Sampling frame	No. of sampled stations	No. of sampled stations with programming data	Sampling weight
1	792	19	19	41.68
2	315	20	18	15.75
3	149	22	22	6.77
4	96	44	43	2.18
5	46	46	44	1.00

IV.D. Dr. Gray's samples do not account for programming differences by station type

(29)   Dr. Gray fails to produce samples that were proportionately representative of the various station types in the population. Consequently, Dr. Gray's samples yield demonstrably biased results, as is evident from his own summary tables.

(30)   Dr. Gray claims that "[a]cross the 2010–2013 Cable Royalty years, with the exception of 2012, each claimant category's share of the total number retransmissions and the volume of retransmissions is relatively steady."[19] In an attempt to explain the exception, Dr. Gray asserts that "[i]n 2012, there were significantly more public television station retransmissions in the sample. . . ."[20]

(31)   However, Dr. Gray does not assess how his sample compared to the actual population of distant signals in any given year, whether his higher reported number of public television station retransmissions in 2012 reflected sampling error, or whether the "relatively stable" shares outside of 2012 may have been a statistical artifact relating to consistent over- or undersampling of specific claimant groups' content.

(32)   Figure 10, which compares the proportion of educational stations in Dr. Gray's sample (green bars) and in the population (blue bars), shows that the share of educational stations in the population ranged between 26% and 28% of all retransmitted stations across the relevant period and was therefore relatively stable over the entire period. In contrast, Dr. Gray consistently undersamples educational stations in 2010, 2011, and 2013, by as much as 6%, and he oversamples educational stations in 2012 by 6%.

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[19] Gray Report, ¶ 33.

[20] *Id.*

Figure 10: Proportion of educational stations in Dr. Gray's sample vs. the population

(33) Dr. Gray's oversampling of public television stations compared with those actually carried in 2012 explains the jump in the number and volume of retransmissions of educational programming that he reported for the 2012 cable royalty year. Moreover, Dr. Gray's undersampling of educational stations for the 2010, 2011, and 2013 cable royalty years means that his sample underreports the number and volume of retransmissions of educational programming carried in these years. It also raises an additional question about which commercial stations made up for the shortfall in his sample for these years.

(34) Figure 11 below, which compares the proportion of independent stations in Dr. Gray's sample (green bars) and in the population (blue bars), shows that Dr. Gray's sampling protocol tends to make up for the undersampling of educational stations by oversampling independent stations. In particular, with the exception of 2012,[21] Dr. Gray's sampling protocol consistently oversamples independent stations in 2010, 2011, and 2013, by as much as 9%.

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[21] Dr. Gray's sampling protocol results in a 11% shortfall of independent stations in 2012.

Figure 11: Proportion of independent stations in Dr. Gray's sample vs. the population

(35)   As is shown in the next section, the patterns of oversampling by station type are clearly evident in Dr. Gray's own estimates of programming volume for each claimant.

IV.E. Dr. Gray's flawed samples yield biased and imprecise estimates

(36)   In Table 1 of his written testimony, Dr. Gray presents estimates of the number of compensable programs and the volume (in minutes) of compensable programming, but he fails to assess the accuracy or precision of his estimates. In this section, I demonstrate that Dr. Gray's estimates are imprecise and document evidence of bias.

(37)   The statistical software package that Dr. Gray used in his analysis is equipped to handle complex sampling designs, thereby making it easy to calculate a 95% confidence interval for each of the estimates that he presents in his Table 1. Because each 95% confidence interval takes the form

$$\text{estimate} \pm \text{margin of error},$$

each confidence interval is completely characterized by its margin of error ("MOE"): a smaller MOE is associated with a narrower confidence interval and is indicative of greater precision.

(38)   Figure 12 below shows Dr. Gray's estimated number of compensable programs (which he refers to as "Retransmissions") for each claimant group together with their associated MOEs. The MOEs are large, generate wide confidence intervals and are indicative of low precision. For example, Dr. Gray's

95% confidence interval for Canadian programs in 2010 is 58,203 ± 48,865. Similarly, Dr. Gray's 95% confidence interval for PTV programming in 2012 is 5,316,379 ± 2,337,521.

Figure 12: Dr. Gray's estimated number of claimant programs and their associated MOEs at the 95% confidence level[22]

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	58,203 ± 48,865	1,441,959 ± 311,923	958,862 ± 684,742	6,849,650 ± 1,447,982	3,023,424 ± 1,409,238	20,302 ± 10,129
2011	206,086 ± 302,376	1,482,977 ± 295,427	1,769,985 ± 1,291,654	7,868,409 ± 1,774,193	3,221,460 ± 1,715,541	26,063 ± 16,200
2012	192,197 ± 208,153	1,933,045 ± 635,198	710,162 ± 856,164	5,075,544 ± 1,582,408	5,316,379 ± 2,337,521	17,942 ± 12,452
2013	114,336 ± 81,907	2,040,715 ± 957,411	984,047 ± 1,103,317	7,192,887 ± 1,653,030	3,818,654 ± 1,855,874	30,513 ± 13,058

(39)   Beyond the large MOEs, it is worth noting the patterns in the estimates and, in particular, evidence of bias in the estimates for the various claimants that permeates each of Dr. Gray's analyses. First, while the estimated number of PTV programs in 2012 is more than 39% higher than in any other year, we know that Dr. Gray oversamples educational stations in 2012 (see Figure 10), which means that his estimate of PTV programs for this year is biased high. Conversely, the fact that Dr. Gray undersamples educational stations in each of 2010, 2011, and 2012 means that his estimates of PTV programs for these years is biased low. The opposite pattern holds true for independent stations, thereby suggesting that Dr. Gray overestimates Program Supplier programming in 2010, 2011, and 2013, while underestimating the programming for this claimant in 2012.

(40)   The uncertainty in Dr. Gray's extrapolation of program counts obviously affects the precision of Dr. Gray's associated calculations of the "Share of All Retransmissions" for each category. This is made explicit in Figure 13 below, which shows that the MOEs for each of Dr. Gray's share estimates are also large.

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[22]   Using Dr. Gray's January 2018 Underlying Materials, produced in discovery, I am able to exactly replicate the results in the January 2018 Gray Report for all results he reports for 2010, 2011, and 2013, and all but a few of the results that he reports for 2012. With respect to the few I am unable to match exactly, it appears based on time stamps on his underlying program and output files for 2012—with the time stamp for the output file (12/25/2017) predating the time stamp for the program file (12/26/2017)— that Dr. Gray may have failed to rerun his program for 2012 after making final edits to it.

Figure 13: Dr. Gray's estimated claimant program shares and their associated MOEs at the 95% confidence level

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	0.47% ± 0.40%	11.67% ± 3.22%	7.76% ± 5.45%	55.45% ± 10.52%	24.48% ± 10.94%	0.16% ± 0.08%
2011	1.41% ± 2.08%	10.17% ± 2.42%	12.14% ± 8.65%	53.99% ± 11.93%	22.10% ± 11.47%	0.18% ± 0.11%
2012	1.45% ± 1.57%	14.59% ± 5.55%	5.36% ± 6.39%	38.32% ± 12.34%	40.14% ± 15.47%	0.14% ± 0.09%
2013	0.81% ± 0.58%	14.39% ± 6.65%	6.94% ± 7.62%	50.72% ± 11.86%	26.93% ± 12.30%	0.22% ± 0.09%

(41) Figure 14 below shows Dr. Gray's estimated number of compensable program minutes (which he calls "Minutes of Retransmissions") for each claimant group together with their associated MOEs. Similar to the MOEs for Dr. Gray's estimates of program counts, these MOEs are also large, generate wide confidence intervals, and are indicative of low precision.

Figure 14: Dr. Gray's estimated number of claimant program minutes and their associated MOEs at the 95% confidence level

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	2,240,730 ± 1,930,893	64,434,468 ± 15,552,110	40,874,792 ± 29,902,246	268,384,016 ± 55,614,628	122,528,736 ± 56,674,212	3,422,649 ± 1,747,689
2011	10,133,423 ± 16,005,721	68,661,584 ± 13,887,668	66,802,396 ± 48,324,760	302,383,392 ± 67,556,256	128,137,416 ± 67,127,896	4,144,455 ± 2,473,243
2012	7,342,197 ± 7,740,455	104,885,200 ± 37,357,564	30,242,208 ± 36,480,640	203,004,880 ± 64,791,232	219,327,680 ± 91,483,776	3,041,336 ± 2,267,596
2013	4,603,787 ± 3,366,453	87,041,688 ± 33,245,454	39,319,380 ± 42,192,628	319,205,920 ± 72,617,248	158,263,488 ± 70,598,080	4,624,055 ± 1,818,795

(42) As with his program counts and shares, the relatively large uncertainty in Dr. Gray's extrapolated programming minutes obviously affects the precision of Dr. Gray's estimates of programming minute shares ("Share of All Volume"). This is made explicit in Figure 15 below, which shows that the MOEs for each of Dr. Gray's programming minute share estimates is also large.

Figure 15: Dr. Gray's estimated number of claimant program minutes and their associated MOEs at the 95% confidence level

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	0.45% ± 0.39%	12.84% ± 3.70%	8.14% ± 5.82%	53.48% ± 10.28%	24.41% ± 10.81%	0.68% ± 0.33%
2011	1.75% ± 2.75%	11.83% ± 2.77%	11.51% ± 8.20%	52.11% ± 11.39%	22.08% ± 11.29%	0.71% ± 0.42%
2012	1.29% ± 1.36%	18.47% ± 6.99%	5.33% ± 6.34%	35.75% ± 11.47%	38.62% ± 14.72%	0.54% ± 0.39%
2013	0.75% ± 0.55%	14.20% ± 5.64%	6.41% ± 6.81%	52.07% ± 11.15%	25.82% ± 11.14%	0.75% ± 0.28%

(43)   Overall, Dr. Gray's estimates are imprecise and show signs of bias that are consistent with his oversampling of certain station types.

V. Dr. Gray's assignment of programs to claimant categories is flawed and unreliable

(44)   As part of his analysis, Dr. Gray assigns programs airing on stations in his samples to one of the claimant categories. However, Dr. Gray fails to examine key relevant information in the Gracenote data, which causes him to incorrectly assign numerous programs to the wrong claimant categories. In this section, I provide examples of such errors.

(45)   First, in the Gray Report, Dr. Gray failed to consider Gracenote's title and program type field when assigning programs to the Canadian claimant category. As a result, Dr. Gray incorrectly assigned every single live telecast of professional and college team sports—including live telecasts of NBA, NHL, and NFL games—on Canadian stations to the Canadian category.[23] In the January 2018 Gray Report, Dr. Gray now includes an additional condition in his categorization algorithm that moves programs from the Canadian claimant category back to the JSC category.

(46)   Second, Dr. Gray fails to consider whether a program was syndicated before assigning it to the Devotional category. In his algorithm, Dr. Gray simply assigns all of the "Religious" programs airing on US broadcast stations to the Devotional category.[24] As a result, non-syndicated religious programs are incorrectly assigned to the Devotional category rather than to the CTV category.

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[23]   Based on Dr. Gray's Underlying Materials, I counted at least 2,900 live telecasts of professional and college team sports originally assigned to Dr. Gray's Canadian category.

[24]   Dr. Gray uses Gracenote's program type field to determine whether a program is "Religious." Dr. Gray subsequently moves some of these programs to the Program Supplier category; however, he never corrects his mis-categorization of non-syndicated religious programs.

VI. Dr. Gray's distant viewing analysis is flawed and unreliable

(47)   Even if Dr. Gray's samples were reliable—which they are clearly not—his measure of distant viewership for compensable programs carried by stations in his samples is flawed and unreliable. Moreover, the royalty shares Dr. Gray extrapolates from his unreliable samples based on his invalid viewing measure are invalid and unreliable.

VI.A.   Dr. Gray relies on an imputed measure of distant viewership in place of Nielsen's reported measure of viewership

(48)   In Table 2 of his report, Dr. Gray reports his extrapolated distant viewing levels and shares. When performing these calculations, however, Dr. Gray does not use the distant household viewing counts or households weights as reported by Nielsen for the compensable programs carried by stations in his samples. Instead, Dr. Gray relies on his own estimates of distant viewing.

(49)   Dr. Gray purportedly resorts to estimating (or imputing) distant viewing records because "there are many instances of no recorded distant viewing of compensable retransmitted programs in the Nielsen Household Meter Data."[25]   In fact, as shown in Figure 16 below, Dr. Gray is without any distant viewing record for more than 90% of the programming in his samples, and he is without any local viewing records for more than 55% of the programming in his samples.

Figure 16: Volume of programming with no viewership data

Year	Volume of programming (by quarter hours) in Dr. Gray's database	Percent with no distant viewing record	Percent with no local viewing record
2010	4,218,107	93.0%	58.6%
2011	4,403,283	94.1%	59.3%
2012	4,269,580	93.6%	63.2%
2013	4,523,946	95.2%	64.9%

(50)   To impute the missing distant viewing records, which accounted for more than 90% of his data, Dr. Gray relies on a regression that relates distant viewing to a measure of local viewing, and other controls.[26]   Then, without explanation or support, Dr. Gray uses this same regression to replace the

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[25]   Gray Report, ¶ 35.

[26]   Beyond his measure of local viewing, Dr. Gray includes the (log of) distant subscribers, the quarter hour in which a program aired, and Gracenote's program type as controls in his regressions.

actual distant viewing records as provided by Nielsen, meaning that Dr. Gray imputes 100% of the distant viewing values that he relies on in his extrapolation.[27]

(51)   The fact that Dr. Gray relies entirely on his own (flawed) estimates—thereby supplanting all of the actual viewing data provided by Nielsen—further undermines the reliability of his viewing analysis.

VI.B. Dr. Gray's imputed measure of distant viewership is flawed and unreliable

(52)   Dr. Gray claims that he could "obtain reliable estimates of distant viewing" from a regression analysis that estimates the relationship between distant viewing for a program and a measure of local viewing for the program, plus other controls. Of course, one needs data on distant viewing and local viewing in order to estimate a relationship between these variables.

(53)   With relatively few records for both distant and local viewing, Dr. Gray tops up his regression data set by replacing missing distant and local viewing records with zeros. Indeed, Figure 17 shows that the bulk of the programming in Dr. Gray's regression analysis is without a distant viewing record, without a local viewing record, or without both. The top row of the figure, for example, shows that more than 50% of the programming in Dr. Gray's regression data set was without any information at all on local and distant viewing. For this programming, Dr. Gray replaces the missing local and distant viewing with zeros. The second and third rows show programming for which Nielsen provided Dr. Gray with a local or distant viewing record, but not both. For this programming, Dr. Gray replaces the missing record with a zero. Finally, the fourth row shows the small subset of Dr. Gray's regression database that reflected actual distant and local viewing records as provided by Nielsen.

Figure 17: Distribution of samples included in Dr. Gray's regressions

Missing distant	Missing local	2010	2011	2012	2013
Yes	Yes	1,790,766	1,813,182	1,889,720	1,983,857
Yes	No	1,526,462	1,594,928	1,380,383	1,435,750
No	Yes	74,006	62,594	80,992	67,489
No	No	220,633	198,461	190,557	149,914

(54)   Dr. Gray's practice of equating missing records with zero viewing lacks foundation and undermines the reliability of his regression analysis. First, Dr. Gray offers no logical explanation for why zero might be the correct value to use in place of a missing record. If anything, Dr. Gray suggests that records were missing "[d]ue to the low frequency of distant viewing and the size of the sample

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[27]   Dr. Gray "employed multiple regression analysis techniques and applied [his] analysis to the [*sic*] *all* programs eligible for compensation." [Gray Report, ¶ 36] (emphasis added)

Nielsen uses to measure total U.S. household viewing,"[28] meaning that the true viewing associated with missing records may be something other than zero. Second, Dr. Gray offers no explanation for the apparent contradiction that arises from this practice: either the missing values truly correspond to zero viewing and the regressions serve no purpose—why estimate a known quantity—or the true values of the missing records potentially differ from zero, in which case Dr. Gray has imposed an incorrect assumption that biases the estimated relationship between distant and local viewing.[29]

VI.C. Dr. Gray's "measure" of local viewing is flawed and unreliable

(55)   A key variable in Dr. Gray's regressions is "a measure of local viewing" for a program.[30] However, nowhere in his report does Dr. Gray elaborate on exactly what his "measure" of local viewing is; nor does Dr. Gray explain how it could possibly be calculated when the majority of programming in his sample is without a local viewing record.

(56)   Dr. Gray's reference to a "measure of local viewing" is misleading, since the variable that he includes in his regression is, in fact, not a reliable measure of local viewing. To see why, consider first that Dr. Gray calculates his "measure" of local viewing based on the ratio of local viewing—when local viewing was available—to the total number of subscribers (local *and* distant) that received a station. Dr. Gray's inclusion of distant subscribers in his "measure" of local viewing means that, all else equal, he will assign higher local viewing to a station with the fewest distant subscribers, and vice versa. For example, Dr. Gray calculates his "measure" of local viewing for a compensable program that aired on WGN in 2010 as the number of local viewing households reported by Nielsen divided by 46,389,224, which includes 41,361,722 distant subscribers reported by the CDC.

(57)   Dr. Gray is unable even to calculate that counterintuitive "measure" from the Nielsen data for more than half of the programming in his database. For the bulk his data—i.e., for programming in his regression database with no local viewing data—Dr. Gray was provided with no record for local viewing and he simply equates missing local viewing with zero viewing.[31]

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[28] Gray Report, ¶ 35,

[29] All else equal, replacing missing observations with zeros alters Dr. Gray's regression estimates and his shares of distant viewing.

[30] Gray Report, ¶ 36.

[31] As noted in Figure 17, Dr. Gray excludes from his regressions station programming that was without a single local viewing record in a given year. In his extrapolation, however, Dr. Gray includes such programming by assuming that the number of local viewing households was equal to the average local viewing for all other programs of the same type that aired at the same time.

VI.D. Dr. Gray does not use sampling weights when estimating his econometric model

(58)   When estimating his regressions, Dr. Gray does not use the sampling weights (however flawed) that he calculated for the stations in his samples. As a result, Dr. Gray's regressions summarize the relationship among variables in his sample as if the unweighted stations in his sample are an accurate representation of the whole population, which they are not.

(59)   It is well known that ignoring sampling weights produces biased estimates of population parameters (in this case programming volume, viewing, and shares). For example, an article in *The Stata Journal* succinctly states:

> If sampling weights are ignored, then the sampling distributions of unweighted statistics underrepresent the values of the random variables associated with low selection probabilities and overrepresent the values associated with high selection probabilities. As a result, unweighted statistics are biased for population parameters they estimate. The effects of clustering and unequal weights are detrimental for statistical inference and so analysts and researchers need to account for them.[32]

(60)   To assess the impact of including Dr. Gray's sampling weights in his regressions, I re-estimated his models with his sampling weights included. Figure 18 shows that the inclusion of Dr. Gray's sampling weights in his regressions would materially alter his royalty shares, resulting in particular in a reduction in the Program Suppliers share. It is important to note, however, that correction of this methodological error still does not produce valid or reliable viewing shares, in light of Dr. Gray's other errors.

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[32] Kolenikov, S. "Resampling variance estimation for complex survey data". *The Stata Journal*, Vol. 10, No. 2, 2010, p. 167.

Figure 18: Dr. Gray's implied royalty shares using his sampling weights (shares without sampling weights in parentheses)

Year	Canadian	CTV	Devotional	Program suppliers	PTV	JSC
2010	2.18% (1.66%)	27.53% (21.27%)	1.14% (1.41%)	38.98% (44.66%)	24.03% (24.12%)	6.15% (6.88%)
2011	4.64% (3.38%)	19.80% (19.68%)	1.32% (1.72%)	35.94% (41.80%)	28.47% (24.26%)	9.83% (9.16%)
2012	5.16% (3.21%)	26.61% (23.50%)	0.58% (0.91%)	26.68% (33.49%)	35.65% (33.54%)	5.32% (5.35%)
2013	4.04% (3.80%)	17.26% (18.17%)	1.20% (0.88%)	46.79% (43.52%)	25.49% (26.48%)	5.21% (7.15%)

VI.E. Dr. Gray's imputed measure is demonstrably biased

(61) To assess the reliability of Dr. Gray's measure of distant viewership, I examined how his estimates compared with the records provided by Nielsen. This comparison reveals a bias in Dr. Gray's estimates that further undermines the reliability of his royalty share calculations.

(62) First, by looking at individual stations, it is apparent that Dr. Gray's regression estimates suggest a significant number of distant viewing households for some stations where the Nielsen data had recorded few or none. For example, as illustrated in Figure 19 below, Dr. Gray's regression estimates produce a significant number of distant viewing households for WSJX-LP, which had zero distant viewing records in the Nielsen sample.

Figure 19: Number of distant viewing household quarter-hours of compensable WSJX-LP programming

Year	Nielsen	Dr. Gray
2010	0	71,804,150
2011	0	52,564,262
2012	0	40,599,758
2013	.	.

Notes: The figures represent the total number of distant household quarter hours viewed of compensable WSJX-LP programming in a given year, as reported by Nielsen and estimated by Dr. Gray. The totals are missing for 2013 because Dr. Gray does not sample WSJX-LP in 2013.

(63) For other stations, Dr. Gray's regression estimates are substantially lower than the distant viewing that was reported by Nielsen. For example, as illustrated in Figure 20 below, Dr. Gray's regression estimates for WJZ-DT produce significantly lower distant viewing than the Nielsen sample in 2010 and 2013, thereby eliminating distant viewing households that were actually measured and reported by Nielsen. Dr. Gray simply has no basis for eliminating households and presenting a so-called

"reliable measure of distant viewership" that is *less* than what was *actually* measured and reported by Nielsen.

Figure 20: Number of distant viewing household quarter-hours of compensable WJZ-DT programming

Year	Nielsen	Dr. Gray
2010	33,413,615	18,757,326
2011	.	.
2012	9,277,308	15,297,840
2013	10,074,053	9,957,033

Notes: The figures represent the total number of distant households that viewed compensable WJZ programming in a given year, as reported by Nielsen and then as estimated by Dr. Gray. The totals are missing for 2011 because Dr. Gray does not sample WJZ in 2011.

(64)   Not only do Dr. Gray's regression estimates create new viewing households and eliminate others, they do so in a manner that benefits certain claimants' supposed viewing shares while reducing other claimants' shares. Figure 21 below, for example, shows that, relative to the Nielsen survey, Dr. Gray's reliance on his regression estimates substantially increases the number of distant viewing households for Program Suppliers and PTV content in most years, while decreasing the total number of distant viewing households in two out of the four years for CTV content.

Figure 21: Aggregate difference between distant household quarter hours estimated by Dr. Gray and reported by Nielsen

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	165,587,954	-787,790,202	81,063,209	1,294,933,310	285,926,204	137,289,065
2011	227,135,651	198,244,878	102,615,257	1,062,420,524	438,452,613	124,413,988
2012	106,544,899	154,301,533	59,287,717	1,197,265,767	655,241,813	56,021,704
2013	213,372,030	-156,665,710	5,672,037	-531,679,612	331,005,817	79,740,425
Total	**712,640,534**	**-591,909,501**	**248,638,219**	**3,022,939,988**	**1,710,626,447**	**397,465,182**

Notes: The figures represent the difference in the extrapolated number of household quarter hours. A negative number indicates that Dr. Gray's estimated number of distant viewing household quarter hours is lower than the number actually reported by Nielsen. Dr. Gray's estimated numbers now reflect Nielsen-weighted household counts, but do not incorporate Nielsen data on the actual amount of viewing done in these distant households.

(65)   Figure 22 shows the percentage point difference in the implied shares between Dr. Gray's estimated number of distant viewing households and the number of distant viewing households actually measured by Nielsen. For example, the figure shows that, relative to the actual distant viewing reported by Nielsen, Dr. Gray's imputation increased the Program Suppliers' share of distant viewing in 2010 by 8.98 percentage points. Similarly, in the same year, Dr. Gray's imputation decreased the CTV's share of distant by 11.49 percentage points relative to the share implied by the actual distant viewing reported by Nielsen.

Figure 22: Aggregate difference between distant household quarter hour shares estimated by Dr. Gray and reported by Nielsen

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	1.54%	-11.49%	0.74%	8.98%	-0.44%	0.66%
2011	2.58%	-3.26%	1.07%	3.21%	-2.66%	-0.95%
2012	0.40%	-4.75%	0.60%	6.91%	-2.41%	-0.74%
2013	2.96%	-2.01%	0.09%	-6.96%	4.78%	1.15%

Notes: The figures represent the difference in the extrapolated share of household quarter hours. A negative number indicates that Dr. Gray's imputation reduced the share relative to the share implied by the weighted household counts actually reported by Nielsen.

(66)   Thus, by relying on his regression estimates, Dr. Gray disproportionately increases distant viewing for some claimants while reducing the number of distant viewing households *below* what was actually measured for others. This is clear evidence that Dr. Gray's regression estimates, and the royalty shares derived from them, are biased and unreliable.

VI.F. Dr. Gray's 95% confidence intervals are invalid

(67)   In Table C-5 of his written testimony, Dr. Gray presents 95% confidence intervals associated with each of his distant viewership share estimates. These intervals are calculated incorrectly and give the mistaken impression that Dr. Gray's viewership shares are precisely estimated.

(68)   There are at least two fundamental problems with Dr. Gray's calculation of his confidence intervals.[33] First, Dr. Gray treats his data as if they were obtained from a simple random sample, thereby ignoring the additional sampling error inherent in his use of cluster sampling. Second, Dr. Gray treats the imputed values (zeros) in his regressions as if they are the true observed values.

(69)   As noted in Section (29), the statistical software package that Dr. Gray used in his analysis is equipped to handle complex sampling designs. This makes it easy to calculate a 95% confidence interval for each of Dr. Gray's royalty share estimates that properly accounts for Dr. Gray's use of cluster sampling. While not a complete accounting of all sources of uncertainty, this calculation enables us to assess how accounting for one element of uncertainty—Dr. Gray's sampling design— affects the width of his confidence intervals.

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[33]   To support the bootstrap resampling procedure that he uses to calculate his confidence intervals, Dr. Gray cites Efron and Tibshirani (1986). However, this article contains no mention of appropriate bootstrap procedures for handling imputed data or complex sampling designs. With clustered data, for example, modifications to the classical (i.i.d.) bootstrap are necessary as "[i]t is important that the resampling be done over entire clusters rather than over individual observations." (A. Colin Cameron and D. L. Miller, "A Practitioner's Guide to Cluster-Robust Inference," *Journal of Human Resources* 50, no. 2 (2015): 328.)

Figure 23: Confidence intervals for Dr. Gray's shares with his distant viewing estimates treated as true observations.

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	1.66% ± 1.51%	21.27% ± 7.56%	1.41% ± 0.71%	44.66% ± 9.22%	24.12% ± 9.97%	6.88% ± 7.10%
2011	3.38% ± 3.01%	19.68% ± 11.27%	1.72% ± 1.09%	41.80% ± 12.19%	24.26% ± 10.12%	9.16% ± 8.38%
2012	3.21% ± 2.49%	23.50% ± 10.86%	0.91% ± 0.84%	33.49% ± 8.90%	33.54% ± 11.28%	5.35% ± 3.89%
2013	3.80% ± 2.86%	18.17% ± 11.69%	0.88% ± 0.73%	43.52% ± 11.21%	26.48% ± 9.64%	7.15% ± 3.16%

(70) Figure 23 shows that the MOEs that take account of Dr. Gray's sampling design are much larger than what he reports in his written testimony. Figure 24 expresses the same MOEs as confidence intervals, which can be compared directly to Dr. Gray's Table C-5. The very substantial differences resulting from properly accounting only for Dr. Gray's sampling design demonstrate the unreliability of Dr. Gray's reported confidence intervals and indicate more accurately the very substantial imprecision of his estimated viewing shares. Properly accounting for Dr. Gray's imputation of distant and local viewing records as well would only further broaden these confidence intervals.[34]

Figure 24. Confidence intervals for Dr. Gray's shares with his distant viewing estimates treated as true observations

Claimant	2010	2011	2012	2013
Canadian Claimants	0.15% - 3.17%	0.37% - 6.39%	0.72% - 5.70%	0.94% - 6.66%
Commercial Television	13.71% - 28.84%	8.42% - 30.95%	12.63% - 34.36%	6.48% - 29.86%
Devotionals	0.70% - 2.12%	0.63% - 2.81%	0.07% - 1.75%	0.15% - 1.61%
Program Suppliers	35.44% - 53.89%	29.61% - 53.99%	24.59% - 42.39%	32.31% - 54.72%
Public Television	14.14% - 34.09%	14.14% - 34.37%	22.27% - 44.82%	16.84% - 36.12%
JSC	0.00% - 13.98%	0.78% - 17.54%	1.46% - 9.24%	3.99% - 10.32%

(71) It is important to note that corrections to Dr. Gray's erroneous confidence intervals do not address the other substantial flaws in the design and execution of his study, discussed above, that result in biased and unreliable point estimates.

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[34] It is known that bootstrap procedures that incorrectly treat imputed values as the true observed values underestimate variance and produce invalid confidence intervals that are too narrow. *See, e.g.,* Jun Shao and Randy R. Sitter, "Bootstrap for Imputed Survey Data," *Journal of the American Statistical Association* 91, no. 435 (1996): 1278.

VI.G. Dr. Gray's revised imputation procedure fails to correct obvious biases

(72)   In the January 2018 Gray Report, Dr. Gray modifies the regression procedure that he uses to impute values of distant household quarter-hours of viewing. In particular, whereas Dr. Gray had originally reported imputed values derived from a single regression for each year, he now reports imputed values derived from two separate regressions for each year: one regression for WGN and another regression for all other stations in his regression dataset.

(73)   Dr. Gray switched to using separate regressions for WGN and non-WGN stations each year from 2010-2013, purportedly because of "the large difference between WGN and non-WGN stations in terms of the extent of non-compensable programming, the number of distant subscribers, and the level of distant viewing."[35] However, the extent of non-compensable programming and the number of distant subscribers are unchanged from the Gray Report.

(74)   Irrespective of any changes to his underlying data and regression specification, Dr. Gray's practice of replacing the actual values reported by Nielsen with his own imputed values lacks foundation or support. For example, Dr. Gray offers no explanation or support for replacing *all* of the actually measured data for WGN with his own imputed values despite receiving updated data from Nielsen that contains distant household quarter-hour viewing data for *all* observations in 2011-2013 and all but 4 of 5,623 observations in 2010.

(75)   The effect of Dr. Gray's switch to his new split-regression imputation procedure ("January 2018 Imputation") can be seen by comparing his new results to those obtained by applying his original single-regression imputation procedure to his updated data ("Single Regression Imputation"). This comparison, which is displayed in Figure 25, shows that Dr. Gray's January 2018 Imputation disproportionately increases the number of distant household quarter-hours imputed for the Program Suppliers claimants by comparison to the results of applying his original regression approach to his new data.

(76)   Figure 25 also shows that Dr. Gray's January 2018 Imputation produces dramatic increases for Program Suppliers relative to the actual levels of weighted viewing household quarter hours reported by Nielsen for 2010, 2011, and 2012, while at the same time imputing levels of weighted viewing household quarter hours for CTV *below* the actual levels reported by Nielsen in 2010, 2012, and 2013.[36]

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[35]   January 2018 Gray Report, fn. 30.

[36]   Dr. Gray computed extrapolated viewing levels from the actual Nielsen records and saved these values in his January 2018 Underlying Materials, which he produced. See "an_cable_10.log", "an_cable_11.log", "an_cable_12.log", and "an_cable_13.log".

Figure 25: Distant viewing household quarter-hours for all stations: January 2018 Nielsen vs. Dr. Gray's Single Regression Imputation and January 2018 Imputation

Year	Claimant	January 2018 Nielsen	January 2018 Imputation	Single Regression Imputation
2010	Canadian	39,029,666	150,412,151	176,230,934
	CTV	2,404,776,283	1,926,448,507	1,538,755,960
	Devotional	42,330,050	127,734,088	160,816,411
	Program Suppliers	2,661,578,082	4,044,541,411	2,925,008,637
	PTV	1,688,628,697	2,183,929,113	1,804,354,033
	JSC	520,157,521	622,863,267	545,480,874
	Total	**7,356,500,300**	**9,055,928,536**	**7,150,646,850**
2011	Canadian	30,485,140	257,620,791	294,274,023
	CTV	1,356,148,817	1,501,042,617	1,307,079,320
	Devotional	35,998,672	131,269,192	108,588,358
	Program Suppliers	2,262,069,676	3,187,300,264	2,210,920,744
	PTV	1,581,109,568	1,849,697,251	1,627,462,126
	JSC	588,770,202	698,443,656	590,098,362
	Total	**5,854,582,075**	**7,625,373,770**	**6,138,422,933**
2012	Canadian	31,578,775	250,425,806	322,865,002
	CTV	1,842,517,668	1,833,992,106	1,456,864,872
	Devotional	13,033,437	70,897,418	45,503,933
	Program Suppliers	1,681,050,984	2,614,022,438	1,773,076,961
	PTV	2,218,368,425	2,618,043,884	1,878,922,995
	JSC	337,204,497	417,592,175	329,273,993
	Total	**6,123,753,785**	**7,804,973,828**	**5,806,507,755**
2013	Canadian	28,736,927	236,713,153	306,088,235
	CTV	1,236,818,238	1,132,947,152	938,720,745
	Devotional	54,464,471	54,763,752	33,256,272
	Program Suppliers	3,330,799,645	2,713,378,344	1,708,574,861
	PTV	1,347,091,558	1,651,304,941	1,286,334,547
	JSC	380,314,382	446,131,307	334,113,755
	Total	**6,378,225,221**	**6,235,238,649**	**4,607,088,416**

Notes: "January 2018 Nielsen" is the extrapolated number of weighted Nielsen household quarter hours in which viewing is observed, as reported in Dr. Gray's January 2018 Underlying Materials; "January 2018 Imputation" is the imputed number of weighted household quarter hours calculated by applying Dr. Gray's revised split-regression approach to his data from the January 2018 Underlying Materials; "Single Regression Imputation" is the imputed number of weighted household quarter hours calculated by applying Dr. Gray's original regression to his data from the January 2018 Underlying Materials.

(77)   Finally, while continuing to produce obvious biases in levels, as shown in Figure 25 above, the ultimate impact of Dr. Gray's January 2018 Imputation is even more evident in the overall shares that it produces. Figure 26 presents the shares reported in the original Gray Report, the shares derived from actual Nielsen weighted household quarter hours in the January 2018 Underlying Materials, the shares reported in the January 2018 Gray Report, and the shares that result from using Dr. Gray's original regression approach with the data from the January 2018 Underlying Materials. The comparison shows that, while Dr. Gray's January 2018 Imputation produces reduced shares for Program Suppliers relative to his original shares ("April 2017 Imputation"), his use of his new regression approach dramatically increases the Program Suppliers share in each and every year while

at the same time decreasing the Canadian, CTV, and JSC shares in each and every year, relative to the shares that would result from applying his original regression approach to his new data.

Figure 26: Dr. Gray's extrapolated distant household quarter-hour shares: January 2018 Nielsen vs. Dr. Gray's April 2017 Imputation, Single Regression Imputation, and January 2018 Imputation

Year	Claimant	April 2017 Imputation	January 2018 Nielsen	January 2018 Imputation	Single Regression Imputation
2010	Canadian	1.96%	0.53%	1.66%	2.46%
	CTV	15.83%	32.69%	21.27%	21.52%
	Devotionals	1.18%	0.58%	1.41%	2.25%
	Program Suppliers	50.94%	36.18%	44.66%	40.91%
	PTV	27.96%	22.95%	24.12%	25.23%
	JSC	2.13%	7.07%	6.88%	7.63%
2011	Canadian	3.93%	0.52%	3.38%	4.79%
	CTV	12.06%	23.16%	19.68%	21.29%
	Devotionals	2.44%	0.61%	1.72%	1.77%
	Program Suppliers	49.92%	38.64%	41.80%	36.02%
	PTV	29.09%	27.01%	24.26%	26.51%
	JSC	2.57%	10.06%	9.16%	9.61%
2012	Canadian	3.58%	0.52%	3.21%	5.56%
	CTV	15.48%	30.09%	23.50%	25.09%
	Devotionals	1.07%	0.21%	0.91%	0.78%
	Program Suppliers	36.17%	27.45%	33.49%	30.54%
	PTV	41.64%	36.23%	33.54%	32.36%
	JSC	2.06%	5.51%	5.35%	5.67%
2013	Canadian	5.16%	0.45%	3.80%	6.64%
	CTV	10.61%	19.39%	18.17%	20.38%
	Devotionals	1.10%	0.85%	0.88%	0.72%
	Program Suppliers	45.09%	52.22%	43.52%	37.09%
	PTV	33.29%	21.12%	26.48%	27.92%
	JSC	4.76%	5.96%	7.15%	7.25%

Notes: "April 2017 Imputation" are shares reported in the original Gray Report; "January 2018 Nielsen" are shares based on the extrapolated number of weighted Nielsen household quarter hours in which viewing is observed, as reported in Dr. Gray's January 2018 Underlying Materials; "January 2018 Imputation" are shares based on Dr. Gray's imputed number of weighted household quarter hours calculated by applying his revised split-regression approach to his data from the January 2018 Underlying Materials; "Single Regression Imputation" are shares based on the imputed number of weighted household quarter hours calculated by applying Dr. Gray's original regression to his data from the January 2018 Underlying Materials.

VII. Program Suppliers Witness Howard Horowitz Miscategorizes a Number of Programs in His Cable Operator Survey Instrument

(78)   Counsel for CTV asked me to review the programs specified by Program Supplier witness Howard Horowitz[37] in certain portions of his survey questionnaires and to evaluate whether they were identified in connection with the correct program category. I understand that, in the 2012 and 2013 versions of Mr. Horowitz's questionnaires that were administered to cable respondents who carried WGN as their only distant signal, the respondents were told, immediately after being read the definition of the category of "syndicated series" broadcast on WGN, that "examples include programs such as" (a) "30 Rock, Adelante Chicago, People to People, and MDA Show of Strength" in 2012 and (b) "30 Rock, Adelante Chicago, Everybody Loves Raymond, and People to People" in 2013.

(79)   Based on the programming information available to me, which I used to perform the categorizations described in my Written Direct Testimony in this proceeding, the two programs "Adelante Chicago" and "People to People" that aired on WGN in 2012 and 2013 are properly categorized as CTV programs, not Program Suppliers or syndicated programs. They aired only on WGN, and did not air on other stations.

(80)   I also understand that, in the 2011, 2012, and 2013 versions of Mr. Horowitz's questionnaires that were administered to cable respondents who carried WGN as their only distant signal, the respondents were asked to estimate the relative value, along with program categories, of "Other sports programming broadcast on WGN. Examples include Horse Racing." Mr. Horowitz considered responses regarding "Other Sports Programming" to be attributable to the Program Suppliers category, along with responses regarding "Movies" and "Syndicated Series."[38]

(81)   Based on the programming information available to me, which I used to perform the categorizations described in my Corrected Written Direct Testimony in this proceeding, the only compensable Horse Racing program that aired on WGN in 2011, 2012, and 2013 was the annual Arlington Million race, which is properly categorized as a CTV program, not a Program Suppliers or syndicated program. The annual horse races aired only on WGN, and did not air on other stations.

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[37] Corrected Direct Testimony of Howard Horowitz, filed April 25, 2017 ("Horowitz").

[38] *See* Horowitz, pp 15-16.

VIII. Data Analyses Regarding Distant Signal Carriage and Viewing

(82)   I was also asked by counsel for CTV to perform a number of data analyses in order to provide charts that could be referred to in the testimony of other CTV Rebuttal witnesses.

(83)   Figure 27 below, which is based on CDC's carriage data, plots the average number of distant signals by the number of local signals at the CSO-community level during 2010-2013.

Figure 27: Relationship between the number of distant signals and local signals offered by a cable system in each cable community during 2010-2013
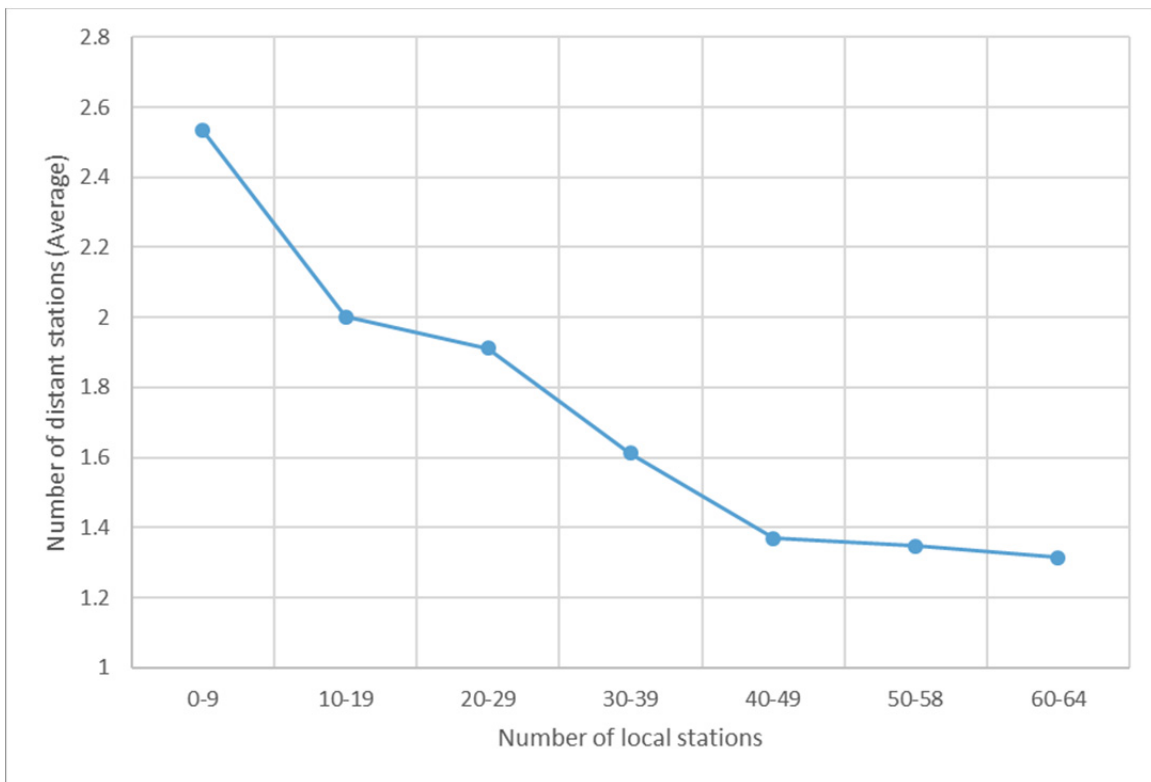
Source: CDC Data

(84)   Figure 28 below shows the average number of distant and local stations offered by CSOs within DMAs, grouped by DMA rankings.

Figure 28: Average offering of distant and local signals grouped by DMA ranking, 2010-2013
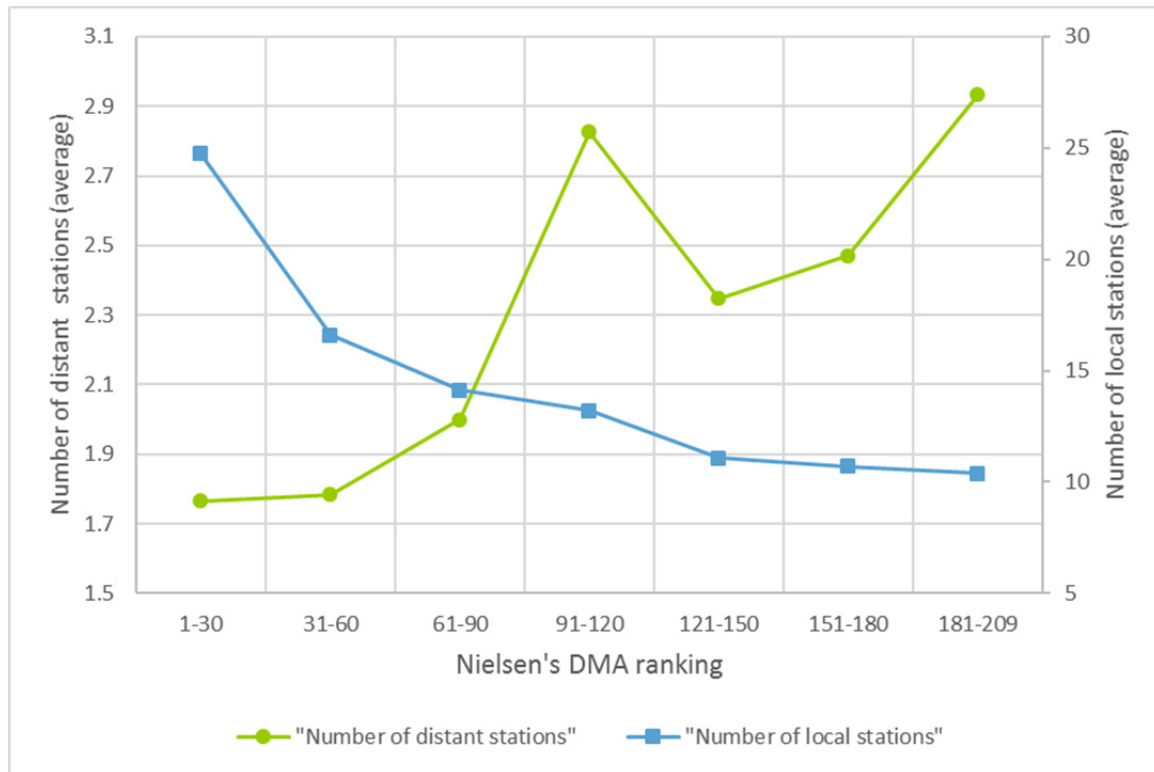
Source: CDC Data, Nielsen Local Television Market Universe Estimates 2009-2010, 2010-2011, 2011-2012, 2012-2013.
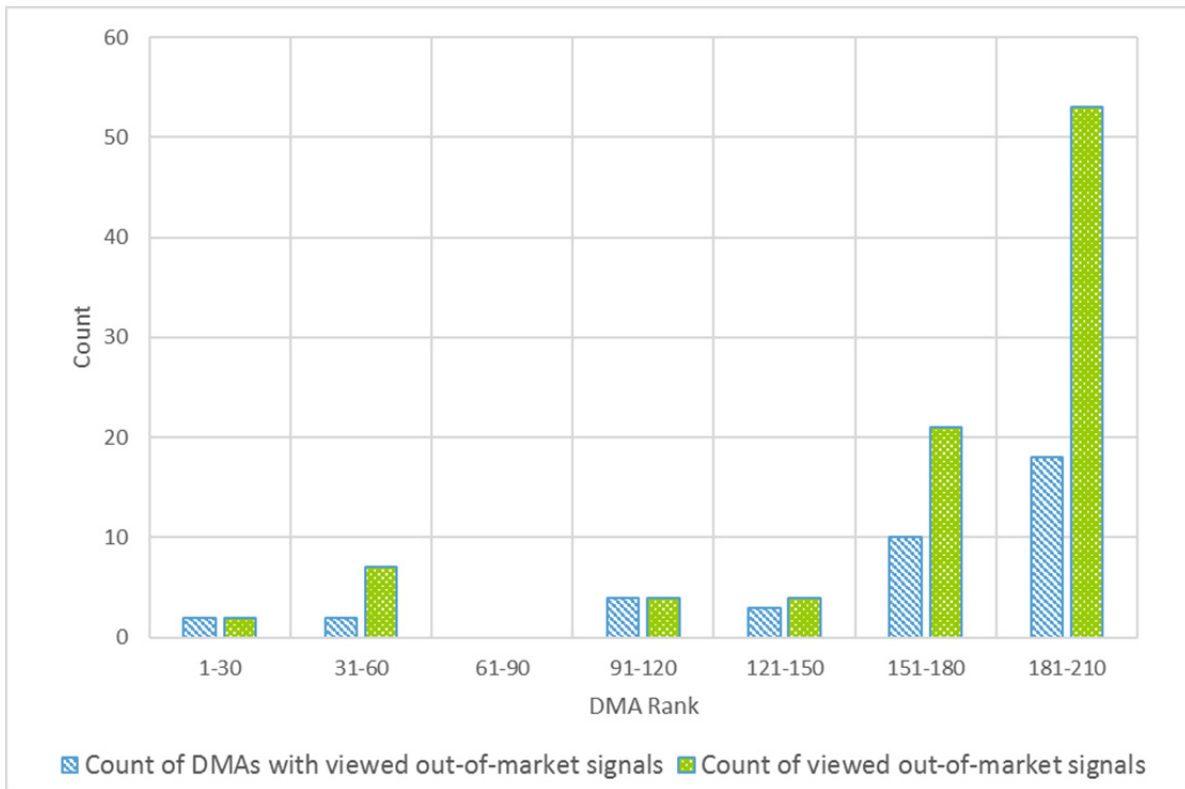
(85)   Figure 29 is an analysis of data presented in Appendix C to a report of the FCC regarding the availability of out-of-market signals. [39] Appendix C listed all DMAs in which Nielsen reported viewing to signals from other DMAs in November 2015, along with the stations that were viewed and their home markets.[40] Figure 29 shows the count of DMAs with at least one viewed out-of-market signal and the total count of viewed out-of-market signals within DMAs, grouped by DMA rank as of November 2015. The figure shows generally that the incidence of reported viewing, and the number of out-of-market signals that were reported as viewed, increased as the DMA size grew smaller (i.e., increased in rank).

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[39]   *See In re Designated Market Areas: Report to Congress Pursuant to Section 109 of the STELA Reauthorization Act of 2014.* MB Docket No. 15-43. June 3, 2016; FCC Report DA 16-613 ("FCC Report"), Appendix C: *Viewership of Out-of-Market Signals Based on Nielsen Market Data,* 195–249.

[40]   Nielsen reported viewing for out-of-market signals only where they exceeded a minimum threshold "cume" rating of 9.5. *See* FCC Report, ¶ 58.

Figure 29: Out-of-market signals viewed and DMA, by DMA rank 2015

Source: FCC Report, Nielsen Local Television Market Universe Estimates effective September 26, 2015.

Appendix A. Duplicate Station Analysis

Figure 30. List of duplicated stations in Dr. Gray's sampling frame by year

Year	Station	In sample	Weight
2010	CBAT	No	13.48
2010	CBAT-DT	No	28.73
2010	CBET	No	2.24
2010	CBET-DT	No	5.27
2010	CBFT	No	2.24
2010	CBFT-DT	No	2.24
2010	CBMT	No	2.24
2010	CBMT-DT	Yes	1.00
2010	CBUT	Yes	1.00
2010	CBUT-DT	Yes	1.00
2010	CBWT	No	5.27
2010	CBWT-DT	Yes	5.27
2010	CFCF	No	28.73
2010	CFCF-DT	No	28.73
2010	CFTM	No	28.73
2010	CFTM-DT	No	28.73
2010	CFTO	No	2.24
2010	CFTO-DT	Yes	2.24
2010	CHLT	Yes	2.24
2010	CHLT-DT	No	13.48
2010	CICA	No	5.27
2010	CICA-DT	No	5.27
2010	CJOH	No	13.48
2010	CJOH-DT	No	13.48
2010	CKSH	No	2.24
2010	CKSH-DT	Yes	1.00
2010	CKWS	No	2.24
2010	CKWS-DT	Yes	2.24
2010	CKY	No	28.73
2010	CKY-DT	No	28.73
2010	KBYU	Yes	28.73
2010	KBYU-DT	No	13.48
2010	KCET	No	13.48
2010	KCET-DT	Yes	1.00
2010	KCET-HD	No	28.73
2010	KERA	No	28.73

Year	Station	In sample	Weight
2010	KERA-DT	Yes	2.24
2010	KETK	No	28.73
2010	KETK-DT	No	28.73
2010	KLRN-DT	Yes	2.24
2010	KLRN-HD	No	13.48
2010	KOCE-DT	No	5.27
2010	KOCE-HD	No	28.73
2010	KOMU-DT	No	28.73
2010	KOMU-HD	No	28.73
2010	KQEH	No	13.48
2010	KQEH-DT	No	2.24
2010	KVCR-DT	No	13.48
2010	KVCR-HD	No	13.48
2010	KWCM	No	28.73
2010	KWCM-DT	No	28.73
2010	KYTX	No	28.73
2010	KYTX-DT	No	28.73
2010	WADL	No	28.73
2010	WADL-DT	No	28.73
2010	WBND-LD	No	28.73
2010	WBND-LP	No	28.73
2010	WBQD-LD	No	13.48
2010	WBQD-LP	No	13.48
2010	WCIU	Yes	28.73
2010	WCIU-DT	No	28.73
2010	WCWW-LD	No	28.73
2010	WCWW-LP	No	28.73
2010	WDCQ	No	28.73
2010	WDCQ-DT	No	5.27
2010	WDIV	No	28.73
2010	WDIV-DT	Yes	2.24
2010	WETA	No	5.27
2010	WETA-DT	No	2.24
2010	WETA-HD	No	28.73
2010	WEYI	No	28.73
2010	WEYI-DT	No	5.27
2010	WFXT-DT	Yes	5.27
2010	WFXT-HD	No	5.27
2010	WGBH	No	28.73
2010	WGBH-DT	Yes	1.00
2010	WGBH-HD	No	28.73

Year	Station	In sample	Weight
2010	WGBX	No	28.73
2010	WGBX-DT	Yes	1.00
2010	WGN-DT	Yes	1.00
2010	WGN-HD	No	13.48
2010	WHUT	No	5.27
2010	WHUT-DT	No	5.27
2010	WHYY-DT	No	2.24
2010	WHYY-HD	No	28.73
2010	WIPB-DT	No	5.27
2010	WIPB-HD	No	13.48
2010	WJYS	No	28.73
2010	WJYS-DT	No	28.73
2010	WKBD	No	28.73
2010	WKBD-DT	Yes	13.48
2010	WLIW	No	2.24
2010	WLIW-DT	Yes	1.00
2010	WLVT-DT	No	2.24
2010	WLVT-HD	No	2.24
2010	WMEU-CA	No	2.24
2010	WMEU-CD	No	28.73
2010	WMPT	No	5.27
2010	WMPT-DT	No	5.27
2010	WMPT-HD	No	13.48
2010	WMYD	Yes	28.73
2010	WMYD-DT	No	28.73
2010	WMYS-LD	No	28.73
2010	WMYS-LP	No	28.73
2010	WNET	No	13.48
2010	WNET-DT	Yes	1.00
2010	WNET-HD	No	5.27
2010	WNJN	Yes	2.24
2010	WNJN-DT	No	2.24
2010	WNJN-HD	No	2.24
2010	WNJT-DT	Yes	1.00
2010	WNJT-HD	No	2.24
2010	WNYE	No	13.48
2010	WNYE-DT	No	5.27
2010	WPXD	Yes	28.73
2010	WPXD-DT	No	28.73
2010	WSBE	Yes	2.24
2010	WSBE-DT	Yes	1.00

Year	Station	In sample	Weight
2010	WSBE-HD	No	28.73
2010	WTCN-CA	No	28.73
2010	WTCN-LP	No	13.48
2010	WTTV-DT	No	13.48
2010	WTTV-HD	No	28.73
2010	WTTW	No	28.73
2010	WTTW-DT	Yes	1.00
2010	WTVS	No	28.73
2010	WTVS-DT	No	5.27
2010	WWJ	No	28.73
2010	WWJ-DT	Yes	28.73
2010	WXSP-CD	No	13.48
2010	WXSP-LP	No	5.27
2010	WXYZ	No	28.73
2010	WXYZ-DT	No	5.27
2011	CBET	No	1.93
2011	CBET-DT	No	1.93
2011	CBWT	No	7.04
2011	CBWT-DT	No	35.30
2011	KBYU	No	35.30
2011	KBYU-DT	No	35.30
2011	KLRN	No	15.48
2011	KLRN-DT	Yes	1.93
2011	KMIZ-DT	No	35.30
2011	KMIZ-HD	No	35.30
2011	KOMU-DT	No	35.30
2011	KOMU-HD	Yes	35.30
2011	KSHV-DT	No	35.30
2011	KSHV-HD	No	35.30
2011	KWCM	No	35.30
2011	KWCM-DT	No	35.30
2011	KWSD	Yes	35.30
2011	KWSD-DT	No	35.30
2011	WBND-LD	No	35.30
2011	WBND-LP	No	35.30
2011	WCNY-DT	No	7.04
2011	WCNY-HD	No	35.30
2011	WCWW-LD	No	35.30
2011	WCWW-LP	No	35.30
2011	WDNI-CD	No	35.30
2011	WDNI-LP	No	35.30

Year	Station	In sample	Weight
2011	WJWJ-DT	No	15.48
2011	WJWJ-HD	No	7.04
2011	WLIW-DT	Yes	1.00
2011	WLIW-HD	No	7.04
2011	WMYS-LD	No	35.30
2011	WMYS-LP	No	35.30
2011	WTTV-DT	Yes	15.48
2011	WTTV-HD	No	35.30
2011	WUNC-DT	Yes	1.93
2011	WUNC-HD	No	7.04
2012	CBUT	Yes	1.00
2012	CBUT-DT	Yes	7.80
2012	KBYU	No	39.95
2012	KBYU-DT	No	39.95
2012	KESQ	No	39.95
2012	KESQ-DT	No	39.95
2012	KPTM-DT	No	39.95
2012	KPTM-HD	No	39.95
2012	KWCM	No	39.95
2012	KWCM-DT	No	18.65
2012	KWTV-DT	No	7.80
2012	KWTV-HD	No	39.95
2012	WBND-LD	No	39.95
2012	WBND-LP	No	39.95
2012	WCWW-LD	No	39.95
2012	WCWW-LP	No	39.95
2012	WFXT-DT	No	7.80
2012	WFXT-HD	No	7.80
2012	WFYI-DT	Yes	7.80
2012	WFYI-HD	No	39.95
2012	WTTV-DT	No	18.65
2012	WTTV-HD	No	39.95
2012	WTXF-DT	Yes	1.00
2012	WTXF-HD	No	18.65
2013	CBET	Yes	1.00
2013	CBET-DT	No	2.18
2013	CBUT	Yes	1.00
2013	CBUT-DT	No	6.77
2013	CBWT	No	6.77
2013	CBWT-DT	No	41.68
2013	KEYC-DT	No	15.75

Year	Station	In sample	Weight
2013	KEYC-HD	No	41.68
2013	KPTM-DT	No	41.68
2013	KPTM-HD	No	41.68
2013	KRWG	No	41.68
2013	KRWG-DT	Yes	2.18
2013	KTCA-DT	No	2.18
2013	KTCA-HD	No	15.75
2013	KWCM	Yes	41.68
2013	KWCM-DT	No	15.75
2013	WFMJ-DT	No	41.68
2013	WFMJ-HD	No	41.68
2013	WFXT-DT	No	6.77
2013	WFXT-HD	No	6.77
2013	WFYI-DT	Yes	2.18
2013	WFYI-HD	No	41.68
2013	WGCL-DT	No	41.68
2013	WGCL-HD	No	41.68
2013	WGTE-DT	No	6.77
2013	WGTE-HD	No	41.68
2013	WKBN-DT	No	15.75
2013	WKBN-HD	No	41.68
2013	WLEX-DT	No	15.75
2013	WLEX-HD	No	41.68
2013	WNAB-DT	No	41.68
2013	WNAB-HD	No	41.68
2013	WNPT-DT	No	6.77
2013	WNPT-HD	No	15.75
2013	WPCH-DT	No	41.68
2013	WPCH-HD	No	41.68
2013	WPXD-DT	No	41.68
2013	WPXD-HD	No	41.68
2013	WQED-DT	Yes	2.18
2013	WQED-HD	No	41.68
2013	WTTW-DT	Yes	1.00
2013	WTTW-HD	No	41.68
2013	WTXF-DT	Yes	1.00
2013	WTXF-HD	No	41.68
2013	WUMN-CA	No	41.68
2013	WUMN-LP	No	41.68
2013	WUPX-DT	No	41.68
2013	WUPX-HD	No	41.68

Year	Station	In sample	Weight
2013	WVAH-DT	No	15.75
2013	WVAH-HD	No	41.68
2013	WWJ-DT	No	41.68
2013	WWJ-HD	No	41.68
2013	WYMT-DT	No	41.68
2013	WYMT-HD	No	41.68
2013	WYTV-DT	No	6.77
2013	WYTV-HD	No	41.68
2013	WZTV-DT	No	41.68
2013	WZTV-HD	No	41.68

DECLARATION OF CHRISTOPHER J. BENNETT

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 2/12/2018

Christopher J. Bennett

Before the
COPYRIGHT ROYALTY JUDGES
WASHINGTON, D.C.

_____
)

In the Matter of   )

)   **CONSOLIDATED PROCEEDING**

Distribution of Cable Royalty Funds   )   **No. 14-CRB-0010-CD (2010-13)**
_____)

REBUTTAL TESTIMONY OF CHRISTOPHER J. BENNETT, PhD

September 15, 2017

Amended February 12, 2018

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List of figures

I. Background

(1)   I am a Principal at Bates White, LLC, an economic consulting firm with offices in San Diego, CA, and Washington, DC. Other than my new position at Bates White, my educational background, experience, and credentials were presented as part of my Written Direct Testimony submitted in this proceeding on December 22, 2016.

(2)   Staff at Bates White under my supervision assisted me with the preparation of this rebuttal analysis and report.

II. Overview and Scope of Opinions

(3) I was asked by counsel for the Commercial Television Claimants (CTV) to review and analyze the viewing-related ~~study~~studies presented in the Corrected and Amended Testimony of Jeffrey S. Gray, PhD, submitted in this proceeding on April 3, 2017 ("Gray Report~~").~~"), and in the second Corrected and Amended Testimony of Jeffrey S. Gray, PhD, submitted in this proceeding on January 22, 2018 ("January 2018 Gray Report"). I was also asked to provide analyses of certain program categorizations reflected in survey questionnaires presented by Program Suppliers witness Howard Horowitz and of certain data regarding the cable distant signal marketplace for use by other rebuttal experts appearing on behalf of CTV.

(4) As part of this analysis, I reviewed the Gray Report and January 2018 Gray Report together with Dr. Gray's reliance materials,[1] which include the Testimony of Paul Lindstrom and the Testimony of Jonda K. Martin. I also reviewed the pages from Mr. Horowitz's questionnaires on which he identified programs on WGNA as being within certain program categories.

(5) After reviewing these materials and conducting my own analysis, I have formed the following opinions:

- Dr. Gray's samples are not representative of the populations of distant stations that were carried in each year between 2010 and 2013, because of at least two fundamental errors. As a result, Dr. Gray consistently overstates the volume and viewership of certain claimants' programming while understating the volume and viewership of other claimants' programming.

- Dr. Gray incorrectly assigns ~~thousands of~~numerous programs to the wrong claimant groups.

- Dr. Gray's viewership study is flawed and unreliable because, among other things, he replaced 100% of the actual counts of distant households in the Nielsen sample with his own estimates.

- These fundamental issues with Dr. Gray's samples and with his viewership study, together with other conceptual and methodological issues discussed below, render Dr. Gray's reported royalty shares biased and unreliable.

- Even if relative program viewership actually did provide "a reasonable and reliable measure of the relative economic value of distantly retransmitted programming,"[2] Dr. Gray has not reliably measured relative program viewership.

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[1] Dr. Gray produced underlying materials for both the Gray Report (hereinafter "April 2017 Underlying Materials") and the January 2018 Gray Report (hereinafter "January 2018 Underlying Materials").

[2] *See* Gray Report, ¶ 40.

- Mr. Horowitz's survey questionnaires erroneously identified certain programs within the Commercial Television Category as being "syndicated series" or "other sports" programs within the Program Suppliers Category.

(6) An explanation of each of these opinions follows below.

III. Overview of Dr. Gray's report

(7)   As I understand it, Dr. Gray undertook to measure the relative amount of viewing by cable households of different categories of programs that aired on retransmitted distant stations.[3] I further understand that Dr. Gray extracted a sample of the distant stations in each year from 2010 through 2013 and provided lists of those sampled stations to Gracenote, Inc. ("Gracenote").[4] Dr. Gray also provided his list of sampled stations to Mr. Lindstrom, along with a list prepared by the Cable Data Corporation ("CDC") showing the counties in which each of the sampled stations was "local" (i.e., not a distant signal).[5] Gracenote then provided Dr. Gray with information in its database, if any, about programs that aired on the sampled stations; and Mr. Lindstrom provided Dr. Gray with information in the Nielsen database, if any, about cable household viewing of programming on sampled stations by quarter hour, with viewing by cable households separated between distant and local viewing.[6] Mr. Lindstrom excluded viewing that was observed during quarter hours in which the programming was not compensable in this proceeding, which I understand includes Big 3 network programming and non-compensable programming on distant signal WGN.[7]

(8)   I understand from their testimony and supporting materials that all of the viewing data provided by Mr. Lindstrom to Dr. Gray was collected in cable households included in Nielsen's National People Meter Sample[8] and that, in the Gray Report, Dr. Gray used unweighted household viewing counts rather than ~~the~~ weighted household viewing data that was also provided by Mr. Lindstrom. In the January 2018 Gray Report, which supplants the Gray Report, I understand that Dr. Gray relies on revised viewing data from Nielsen for WGN and on revised lists of claimants' programs for use in his categorization,[9] and that he has also switched to using weighted household data rather than unweighted household data provided to him by Nielsen.

(9)   I further understand that Dr. Gray does not directly include the measured Nielsen distant viewing data provided to him when calculating the volume and share of viewing by claimant category. Instead, he uses the data for local and distant viewing, where it was available, to develop a regression-based model purportedly describing the relationship between local viewing and distant viewing by program

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[3]   Gray Report, ¶ 30.

[4]   Gray Report, ¶ 23.

[5]   Testimony of Paul B. Lindstrom, Dec. 22, 2016, ("Lindstrom Report") at p.4.

[6]   Lindstrom Report at p.4; Gray Report, ¶ 23.

[7]   Gray Report, ¶ 27.

[8]   In his supporting materials, Mr. Lindstrom states that "[t]he current MPAA Local/Distant Viewing exposure is based on Stated Coded viewing in the National People Meter Sample" (PS-2010-13-C-002635-002637.pdf at p.1).

[9]   Dr. Gray includes new program lists in his January 2018 Underlying Materials. See, for example, "Notes on Claimants-Titles To Add-Remove For Jeff (8842257).xlsx", dated May 9, 2017.

category and airing time.[10] Then, in his ultimate viewing share analyses, Dr. Gray relies on distant household counts projected from his econometric model, supplanting all of the actual distant household counts in the Nielsen viewing data.

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[10] Gray Report, ¶ 36, and 37. In the January 2018 Gray Report, Dr. Gray introduces separate regressions for WGN and non-WGN stations. *See* January 2018 Gray Report, fn. 30.

IV. Dr. Gray's sampling design is flawed, and his samples produce biased and imprecise estimates

(10)   In this section, I outline a number of methodological, sampling, and non-sampling errors that directly undercut the reliability of Dr. Gray's samples and calculations.

(11)   As a starting point for this discussion, it is helpful to consider a hypothetical setting that is free of sampling and non-sampling errors. In this setting, Dr. Gray would not have drawn a sample or categorized the programs; instead, he would have had available to him a complete enumeration of all programs, the claimant category to which each belonged, and the households viewing them. That is, Dr. Gray would have had available to him:

1.   The entire population of the programs that aired on each distantly retransmitted station, and the correct identity of the claimant category to which each program belonged

2.   The entire population of the distant households that viewed each of the programs that aired on the distantly retransmitted stations

(12)   In this hypothetical setting, the measurement of relative distant program viewership is accomplished by counting the number of distant households that viewed the programs within each claimant category. There is no sampling error in this hypothetical setting, since all programs and households are observed and accounted for, and there is no non-sampling error either, since the program information is complete, accurate, and correctly categorized.

(13)   By contrast, Dr. Gray had to contend with both sampling and non-sampling errors because he did not have data for either the entire population of distant signal programs or the entire population of distant households that viewed any of the distant signal programs. Indeed, in place of a complete enumeration of programs, Dr. Gray chose to rely on a sample of program bundles offered on a subset of distantly retransmitted stations. And in place of a complete enumeration of the distant households that viewed each program, Dr. Gray was supplied with viewing data for a sample of households covering some of the programs in his sample—data which he subsequently supplanted with his own estimates.

(14)   Dr. Gray's decision to rely on a statistical sample of programs, the sampling methodology he used, and errors in his implementation of this methodology give rise to errors that undercut the accuracy, precision, and reliability of his estimates of programming volume and viewership. In the remainder of this section, I provide a detailed description of Dr. Gray's sampling methodology, errors in his implementation of this methodology, and the impact that his choice of methodology and these errors had on the accuracy, precision, and reliability of his estimates.

IV.A. Dr. Gray's sampling design is prone to high sampling error and biased samples

(15) When calculating programming volume and viewership, Dr. Gray relies on a sample of programs. However, Dr. Gray does not sample the programs directly. Rather, he samples stations. As a consequence, he draws into his sample only the programming bundles that were carried on his sampled stations. Specifically, Dr. Gray stratifies stations that were carried as distant signals in each year based on the number of distant subscribers to which they were carried. Dr. Gray then draws a random sample of stations from within each stratum,[11] and, if Gracenote included a sampled station in its database, he includes the programs that were bundled and offered on that sampled station in his sample.

(16) Dr. Gray's sampling of program bundles (i.e., sampling by station) is an example of cluster sampling. Relative to simple random sampling, cluster sampling is typically a lower-cost option. In this case, drawing a simple random sample of distantly retransmitted programs (by, say, airing date) would almost surely be more costly, as it would likely require program data from Gracenote for each and every station that was carried as a distant signal. By using cluster sampling, however, Dr. Gray is able to reduce the number of stations for which Gracenote data was required.

(17) The disadvantage of cluster sampling is that it tends to be less precise and more prone to bias than simple random samples of equal size. This is because the individual clusters often contain a non-random and relatively homogeneous set of units.[12] For example, it is well known that students are not randomly assigned to schools but instead generally attend the schools within their neighborhoods. As a result, students within schools (clusters) tend to be similar with respect to socioeconomic status and other characteristics, which means that cluster sampling, by selecting a sample of schools rather than students, tends to give rise to relatively homogeneous samples with high sampling error relative to samples of the same size chosen by other sampling designs.

(18) This well-known disadvantage of cluster sampling is particularly relevant for Dr. Gray's study, because the programs belonging to claimant categories are often highly concentrated by station type. Indeed, Figure 1 below, which contains the average number of programs by claimant and station type (i.e., Canadian, educational, network, independent, or low power), shows just how sensitive the distribution of programming is to the type of station selected. For example, based on an analysis of Dr. Gray's own data, a single educational station, on average, contributes 12,366 additional Public Television ("PTV") programs to the sample and, hence, over- or undersampling of this station type has a dramatic impact on the volume and share of PTV programming. Similarly, the inclusion (or

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[11]   Gray Report, ¶ 23.

[12]   *See* Paul S. Levy and Stanley Lemeshow, *Sampling of Populations: Methods and Applications*, 4th ed. (Hoboken, NJ: John Wiley & Sons, 2008), 228 [hereinafter "Levy and Lemeshow"].

exclusion) of a single Canadian station in Dr. Gray's data adds (or subtracts) an average of ~~11,021~~10,935 Canadian programs. Other claimants' programming is also disproportionately carried on certain station types. For example, Program Supplier programs are disproportionately carried on independent and low-power stations, meaning that over- or undersampling of these station types will have a dramatic impact on the volume and share of Program Suppliers' content.

Figure 1: Average distribution of Gray's categorized programs by station type for 2010–2013.[13]

Station Type	Canadian	CTV	Devotional	Program suppliers	PTV	JSC
Canadian	~~11,021~~10,935	20	8	1,605	0	~~0~~86
Educational	0	0	5	0	12,366	0
Independent	0	1,~~481~~482	1,170	9,325	0	36
Low-power	0	2,267	787	11,135	0	35
Network	0	2,353	59	3,488	0	6

(19)   As documented in Section IV.D below, Dr. Gray's samples tend to be skewed by station type and therefore also skewed in their representation of claimant minutes. Dr. Gray could have prevented this source of bias and ensured the correct representation by station type in his samples had he included station type as a stratification variable. Instead, Dr. Gray has chosen to stratify only by the number of distant subscribers and, in doing so, actually amplifies the additional sampling variability and potential for bias brought about by his use of cluster sampling.

(20)   To help illustrate this point, consider Figure 2 below, which shows the counts of stations in Dr. Gray's sampling frame by stratum in 2010, along with the number of sampled stations and the sampling weight that Dr. Gray has attached to stations in each stratum. The figure shows, for example, that Dr. Gray samples 22 stations to represent the 632 stations in his bottom stratum, with each of these 22 stations being assigned a sampling weight equal to 28.73 (632/22). Because each PTV station accounts for approximately 12,366 programs, the random selection of a single educational station from among the 632 stations in the bottom stratum will cause Dr. Gray's extrapolated number of educational programs to swing by as much as 355,275 (28.73 × 12,366). Similarly, the random selection of a single Canadian station from among the 632 stations in the bottom stratum will cause Dr. Gray's extrapolated number of Canadian programs to swing by as much as ~~316,633~~314,163 (28.73 × ~~11,021~~10,935). This same problem was present in each of the years covered by Dr. Gray's study.

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[13]   Note that Figure 1 is based on the program data presented by Dr. Gray, which reflects obvious program categorization errors. For example, his data show CTV programs ~~— and no JSC programs —~~ appearing on Canadian stations and Devotional programs appearing on PTV stations, both of which are incorrect in light of the category definitions and the data analyses I performed in connection with my Written Direct Testimony in this proceeding. Notwithstanding these categorization errors, however, Figure 1 demonstrates that, given the station type disparities that appeared in his own data, Dr. Gray's failure to control for those disparities in his sample selection produces unreliable results.

Figure 2: Distribution of sampled stations by stratum in 2010[14]

Stratum	Sampling frame	No. of sampled stations	Sampling weight
1	632	22	28.73
2	310	23	13.48
3	158	30	5.27
4	110	49	2.24
5	29	29	1.00

IV.B. Dr. Gray's sampling frame is wrong

(21)   A sampling frame is an enumeration of the items from which a sample is selected. Ideally, the sampling frame will be identical to—and therefore representative of—the target population that one seeks to study. When this is not the case, a sample drawn from the sampling frame may not suitably represent the target population.[15]

(22)   In this matter, Dr. Gray's purported target population is the set of programs (by count, minutes, and total viewers) that aired on "all stations distantly retransmitted by CSOs in every royalty year."[16] Yet his sampling frame includes more "stations" than are in his target population. This misalignment between target population and sampling frame—which impacts the reliability of his samples—arose because Dr. Gray failed to expunge a number of duplicate stations from the CDC list of distantly retransmitted stations upon which he relied.[17]

(23)   Dr. Gray's failure to expunge duplicate stations from his sampling frame is evident from Figure 3, which compares the number of stations in Dr. Gray's sampling frame to the number of stations that were actually carried as distant signals in each year from 2010 to 2013.

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[14]   Again, this figure uses Dr. Gray's own sampling frame and sampling weight numbers. As is shown in the following sections, he determines both of these incorrectly in each of the study years.

[15]   *See, e.g.,* David E. McNabb, *Nonsampling Error in Social Surveys* (Los Angeles: Sage Publications, Inc., 2014) [hereinafter McNabb], Chapter 5.

[16]   Gray Report, ¶ 23.

[17]   Duplication is an "error that occurs when the frame list is released without close scrutiny for duplicate entries or when master lists are not checked for accuracy. . . . The main problem with multiple listings is that, when a unit is represented more than once on the frame list, the probability of that unit being selected is different from that of other units in the survey—a violation of the random sample selection procedure" (McNabb, 86). The CDC's list of distantly retransmitted stations reflects the list of call signs as reported by CSOs, and it contains many instances in which different CSOs report different versions of a call sign for the same station (e.g., CBUT and CBUT-DT).

Figure 3: Counts of stations carried as distant signals and in Dr. Gray's sampling frame, by year[18]

Year	Sampling Frame	Population
2010	1,239	1,169
2011	1,338	1,320
2012	1,382	1,370
2013	1,398	1,369

(24)   This error is also evident in the list of sampled stations that Dr. Gray reports in Appendix B of his written testimony, an excerpt of which is shown in Figure 4 below. In this excerpt, the Canadian station CBUT-DT shows up twice in Dr. Gray's sample for 2010, first as CBUT-DT and then again as CBUT. The two are simply different designations for the same station, with the same programming.

Figure 4: Partial list of Dr. Gray's sampled stations

2010			2011			2012			2013	
Station	Distant Subscribers		Station	Distant Subscribers		Station	Distant Subscribers		Station	Distant Subscribers
WGN-DT	41,361,722		WGN-DT	43,106,794		WGN-DT	42,459,172		WGN-DT	42,522,609
WLIW-DT	743,494		CBUT	966,581		CBUT	868,203		CBUT	893,666
WNET-DT	661,353		WLIW-DT	680,208		WLIW-DT	613,759		WLIW-DT	644,340
WPIX-DT	605,742		WNET-DT	643,737		WPIX-DT	590,292		WPIX-DT	571,383
CBUT-DT	519,880		WPIX-DT	611,976		WBRE-DT	589,716		WNET-DT	516,323
WUAB-DT	502,043		WNBC-DT	443,643		WNET-DT	515,030		CKSH	367,635
CBUT	495,028		WLRN-DT	440,554		WNBC-DT	432,652		KZSW-LP	356,147

Source: Appendix B attached to Testimony of Jeffrey S. Gray, PhD.

(25)   Dr. Gray's failure to remove duplicate stations—see Appendix A for a complete list—distorts his count of unique stations, his assignment of stations to individual strata, and the sampling weights that he calculates based on his incorrect station count. The potential effects include the following:

    a.   Double-counting some stations in the sampling frame, which changed the likelihood of selection for all stations outside the top stratum; and

    b.   Where both versions of the duplicative station were selected, such as for CBUT above in 2010, overrepresentation of the duplicate station in the sample, and the exclusion of a non-duplicate station from the sample; and

    c.   Incorrect sampling weights being applied to sampled stations in strata with one or more of the duplicative stations

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[18]   For the purpose of this table, a pair of call signs with the following suffixes are treated as the same signal: "No suffix and DT", "No suffix and HD", "DT and HD", "LD and LP", "CD and LP", "CA and CD", and "CA and LP".

IV.C. Dr. Gray's sampling weights are wrong

(26) As noted in the previous section, Dr. Gray incorrectly calculates his sampling weights based on sampling frames that do not match the population of retransmitted distant stations. In this section, I describe how the errors in Dr. Gray's sampling weights are further compounded by the fact that Dr. Gray has dropped sampled stations that did not have coverage in the Gracenote data.

(27) Figure 5 below shows the number of sampled stations with Gracenote data by year. In total, Dr. Gray is forced to drop 24 (or 3.9%) of his 609 sampled stations because of missing Gracenote data.

Figure 5: Distribution of sampled stations with Gracenote data

Year	Sampling Frame	Sampled Stations	Sampled Stations with Gracenote Data
2010	1,239	153	145
2011	1,338	153	148
2012	1,382	152	146
2013	1,398	151	146
Total	**5,357**	**609**	**585**

(28) While Dr. Gray samples 153 stations in 2010, his extrapolation is based only on the 145 stations for which Gracenote data were available. Moreover, the number of dropped stations varied by stratum, which introduced a further disparity due to differential weighting. For example, as shown in Figure 6 below, 22 stations are sampled by Dr. Gray to represent the 632 stations in his bottom stratum in 2010, but only 21 stations—representing approximately 603 of the 632 stations in the bottom stratum—are included in his extrapolations for 2010. Yet Dr. Gray does not adjust his weighting to account for the different number of missing stations across the strata. The impact of this error applies in each of Dr. Gray's station samples, as reflected in Figures 6–9 below.

Figure 6: Distribution of sampled stations by stratum in 2010

Stratum	Sampling frame	No. of sampled stations	No. of sampled stations with programming data	Sampling weight
1	632	22	21	28.73
2	310	23	23	13.48
3	158	30	27	5.27
4	110	49	46	2.24
5	29	29	28	1.00

Figure 7: Distribution of sampled stations by stratum in 2011

Stratum	Sampling frame	No. of sampled stations	No. of sampled stations with programming data	Sampling weight
1	706	20	20	35.30
2	325	21	21	15.48
3	162	23	20	7.04
4	116	60	58	1.93
5	29	29	29	1.00

Figure 8: Distribution of sampled stations by stratum in 2012

Stratum	Sampling frame	No. of sampled stations	No. of sampled stations with programming data	Sampling weight
1	759	19	19	39.95
2	317	17	16	18.65
3	156	20	19	7.80
4	105	51	50	2.06
5	45	45	42	1.00

Figure 9: Distribution of sampled stations by stratum in 2013

Stratum	Sampling frame	No. of sampled stations	No. of sampled stations with programming data	Sampling weight
1	792	19	19	41.68
2	315	20	18	15.75
3	149	22	22	6.77
4	96	44	43	2.18
5	46	46	44	1.00

IV.D. Dr. Gray's samples do not account for programming differences by station type

(29)   Dr. Gray fails to produce samples that were proportionately representative of the various station types in the population. Consequently, Dr. Gray's samples yield demonstrably biased results, as is evident from his own summary tables.

(30)   Dr. Gray claims that "[a]cross the 2010–2013 Cable Royalty years, with the exception of 2012, each claimant category's share of the total number retransmissions and the volume of retransmissions is relatively steady."[19] In an attempt to explain the exception, Dr. Gray asserts that "[i]n 2012, there were significantly more public television station retransmissions in the sample. . . ."[20]

(31)   However, Dr. Gray does not assess how his sample compared to the actual population of distant signals in any given year, whether his higher reported number of public television station retransmissions in 2012 reflected sampling error, or whether the "relatively stable" shares outside of 2012 may have been a statistical artifact relating to consistent over- or undersampling of specific claimant groups' content.

(32)   Figure 10, which compares the proportion of educational stations in Dr. Gray's sample (green bars) and in the population (blue bars), shows that the share of educational stations in the population ranged between 26% and 28% of all retransmitted stations across the relevant period and was therefore relatively stable over the entire period. In contrast, Dr. Gray consistently undersamples educational stations in 2010, 2011, and 2013, by as much as 6%, and he oversamples educational stations in 2012 by 6%.

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[19] Gray Report, ¶ 33.

[20] *Id.*

Figure 10: Proportion of educational stations in Dr. Gray's sample vs. the population

(33) Dr. Gray's oversampling of public television stations compared with those actually carried in 2012 explains the jump in the number and volume of retransmissions of educational programming that he reported for the 2012 cable royalty year. Moreover, Dr. Gray's undersampling of educational stations for the 2010, 2011, and 2013 cable royalty years means that his sample underreports the number and volume of retransmissions of educational programming carried in these years. It also raises an additional question about which commercial stations made up for the shortfall in his sample for these years.

(34) Figure 11 below, which compares the proportion of independent stations in Dr. Gray's sample (green bars) and in the population (blue bars), shows that Dr. Gray's sampling protocol tends to make up for the undersampling of educational stations by oversampling independent stations. In particular, with the exception of 2012,[21] Dr. Gray's sampling protocol consistently oversamples independent stations in 2010, 2011, and 2013, by as much as 9%.

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[21] Dr. Gray's sampling protocol results in a 11% shortfall of independent stations in 2012.

Figure 11: Proportion of independent stations in Dr. Gray's sample vs. the population

(35)   As is shown in the next section, the patterns of oversampling by station type are clearly evident in Dr. Gray's own estimates of programming volume for each claimant.

IV.E. Dr. Gray's flawed samples yield biased and imprecise estimates

(36)   In Table 1 of his written testimony, Dr. Gray presents estimates of the number of compensable programs and the volume (in minutes) of compensable programming, but he fails to assess the accuracy or precision of his estimates. In this section, I demonstrate that Dr. Gray's estimates are imprecise and document evidence of bias.

(37)   The statistical software package that Dr. Gray used in his analysis is equipped to handle complex sampling designs, thereby making it easy to calculate a 95% confidence interval for each of the estimates that he presents in his Table 1. Because each 95% confidence interval takes the form

$$\text{estimate} \pm \text{margin of error,}$$

each confidence interval is completely characterized by its margin of error ("MOE"): a smaller MOE is associated with a narrower confidence interval and is indicative of greater precision.

(38)   Figure 12 below shows Dr. Gray's estimated number of compensable programs (which he refers to as "Retransmissions") for each claimant group together with their associated MOEs. The MOEs are large, generate wide confidence intervals and are indicative of low precision. For example, Dr. Gray's

95% confidence interval for Canadian programs in 2010 is 58,~~812 ± 49,369~~203 ± 48,865. Similarly, Dr. Gray's 95% confidence interval for PTV programming in 2012 is 5,316,379 ± 2,337,521.

Figure 12: Dr. Gray's estimated number of claimant programs and their associated MOEs at the 95% confidence level[22]

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	58,~~812~~203 ± ~~49,369~~48,865	1,441,959 ± 311,~~922~~923	~~960,034~~ 958,862 ± ~~685,373~~684,742	6,~~848,477~~849,650 ± 1,447,~~898~~982	3,023,424 ± 1,409,238	~~19,693~~ 20,302 ± 10,~~121~~129
2011	206,~~553~~086 ± 302,~~437~~376	1,482,977 ± 295,427	1,769,985 ± 1,291,654	7,868,~~472~~409 ± 1,774,~~213~~193	3,221,460 ± 1,715,541	~~25,551~~ 26,063 ± 16,~~195~~200
2012	~~193,326~~ 192,197 ± ~~209,572~~208,153	1,933,045 ± 635,198	710,162 ± 856,164	5,075,~~584~~544 ± 1,582,408	5,316,379 ± 2,337,521	~~16,774~~ 17,942 ± 12,~~371~~452
2013	~~115,240~~ 114,336 ± ~~82,515~~81,907	2,040,~~621~~715 ± 957,411	984,~~046~~047 ± 1,103,317	7,192,~~805~~887 ± 1,653,~~019~~030	3,818,654 ± 1,855,874	~~29,661~~ 30,513 ± 13,~~067~~058

(39) Beyond the large MOEs, it is worth noting the patterns in the estimates and, in particular, evidence of bias in the estimates for the various claimants that permeates each of Dr. Gray's analyses. First, while the estimated number of PTV programs in 2012 is more than 39% higher than in any other year, we know that Dr. Gray oversamples educational stations in 2012 (see Figure 10), which means that his estimate of PTV programs for this year is biased high. Conversely, the fact that Dr. Gray undersamples educational stations in each of 2010, 2011, and 2012 means that his estimates of PTV programs for these years is biased low. The opposite pattern holds true for independent stations, thereby suggesting that Dr. Gray overestimates Program Supplier programming in 2010, 2011, and 2013, while underestimating the programming for this claimant in 2012.

(40) The uncertainty in Dr. Gray's extrapolation of program counts obviously affects the precision of Dr. Gray's associated calculations of the "Share of All Retransmissions" for each category. This is made

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[22] Using Dr. Gray's January 2018 Underlying Materials, produced in discovery, I am able to exactly replicate the results in the January 2018 Gray Report for all results he reports for 2010, 2011, and 2013, and all but a few of the results that he reports for 2012. With respect to the few I am unable to match exactly, it appears based on time stamps on his underlying program and output files for 2012—with the time stamp for the output file (12/25/2017) predating the time stamp for the program file (12/26/2017)— that Dr. Gray may have failed to rerun his program for 2012 after making final edits to it.

explicit in Figure 13 below, which shows that the MOEs for each of Dr. Gray's share estimates are also large.

Figure 13: Dr. Gray's estimated claimant program shares and their associated MOEs at the 95% confidence level

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	0.~~48~~47% ± 0.40%	11.67% ± 3.22%	7.~~77~~76% ± 5.~~46~~45%	55.~~44~~45% ± 10.52%	24.48% ± 10.94%	0.16% ± 0.08%
2011	1.~~42~~41% ± 2.08%	10.17% ± 2.42%	12.14% ± 8.65%	53.99% ± 11.93%	22.10% ± 11.47%	0.18% ± 0.11%
2012	1.~~46~~45% ± 1.~~58~~57%	14.59% ± 5.55%	5.36% ± 6.39%	38.32% ± 12.34%	40.14% ± 15.47%	0.~~13~~14% ± 0.09%
2013	0.81% ± 0.~~59~~58%	14.39% ± 6.65%	6.94% ± 7.62%	50.72% ± 11.86%	26.93% ± 12.30%	0.~~21~~22% ± 0.09%

(41)   Figure 14 below shows Dr. Gray's estimated number of compensable program minutes (which he calls "Minutes of Retransmissions") for each claimant group together with their associated MOEs. Similar to the MOEs for Dr. Gray's estimates of program counts, these MOEs are also large, generate wide confidence intervals, and are indicative of low precision.

Figure 14: Dr. Gray's estimated number of claimant program minutes and their associated MOEs at the 95% confidence level

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	2,~~337,432~~240,730 ± ~~2,006,676~~1,930,893	64,434,468 ± 15,552,110	40,~~909,968~~874,792 ± ~~29,916,482~~902,246	268,~~348,832~~384,016 ± 55,~~612,334~~614,628	122,528,736 ± 56,674,~~211~~212	3,~~325,946~~422,649 ± 1,~~746,588~~747,689
2011	10,~~210,376~~133,423 ± 16,~~012,359~~005,721	68,661,584 ± 13,887,668	66,802,396 ± 48,324,760	302,~~393,184~~383,392 ± 67,~~559,899~~556,256	128,137,416 ± 67,127,~~899~~896	4,~~058,349~~144,455 ± 2,~~472,367~~473,243
2012	7,~~527,288~~342,197 ± 7,~~970,171~~740,455	104,885,200 ± 37,357,~~565~~564	30,242,208 ± 36,480,~~641~~640	203,~~009,680~~004,880 ± 64,791,~~269~~232	219,327,680 ± 91,483,776	3,041,336 ± ~~2,851,534~~ ~~±~~ ~~2,255,801~~267,596
2013	4,~~751,082~~603,787 ± 3,~~460,440~~366,453	87,~~037,064~~041,688 ± 33,245,~~449~~454	39,319,~~352~~380 ± 42,192,~~630~~628	319,~~198,368~~205,920 ± 72,~~616,095~~617,248	158,263,488 ± 70,598,~~079~~080	4,~~482,877~~624,055 ± 1,~~819,861~~818,795

(42)   As with his program counts and shares, the relatively large uncertainty in Dr. Gray's extrapolated programming minutes obviously affects the precision of Dr. Gray's estimates of programming minute shares ("Share of All Volume"). This is made explicit in Figure 15 below, which shows that the MOEs for each of Dr. Gray's programming minute share estimates is also large.

Figure 15: Dr. Gray's estimated number of claimant program minutes and their associated MOEs at the 95% confidence level

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	0.~~47~~45% ± 0.~~40~~39%	12.84% ± 3.70%	8.~~15~~14% ± 5.~~83~~82%	53.~~47~~48% ± 10.28%	24.41% ± 10.81%	0.~~66~~68% ± 0.~~34~~33%
2011	1.~~76~~75% ± 2.75%	11.83% ± 2.77%	11.51% ± 8.20%	52.11% ± 11.39%	22.08% ± 11.29%	0.~~70~~71% ± 0.42%
2012	1.~~33~~29% ± 1.~~44~~36%	18.47% ± 6.99%	5.33% ± 6.34%	35.75% ± 11.47%	38.62% ± 14.72%	0.~~50~~54% ± 0.39%
2013	0.~~77~~75%	14.20%	6.41%	52.07%	25.82%	0.~~73~~75%

| | ± 0.~~57~~55% | ± 5.64% | ± 6.81% | ± 11.15% | ± 11.14% | ± 0.28% |

(43)   Overall, Dr. Gray's estimates are imprecise and show signs of bias that are consistent with his oversampling of certain station types.

V. Dr. Gray's assignment of programs to claimant categories is flawed and unreliable

(44)   As part of his analysis, Dr. Gray assigns programs airing on stations in his samples to one of the claimant categories. However, Dr. Gray fails to examine key relevant information in the Gracenote data, which causes him to incorrectly assign ~~thousands of~~numerous programs to the wrong claimant categories. In this section, I provide examples of such errors.

(45)   First, ~~Dr.~~in the Gray ~~fails~~Report, Dr. Gray failed to consider Gracenote's title and program type field when assigning programs to the Canadian claimant category. As a result, Dr. Gray incorrectly ~~assigns~~assigned every single live telecast of professional and college team sports—including live telecasts of NBA, NHL, and NFL games—on Canadian stations to the Canadian category.[23] In the January 2018 Gray Report, Dr. Gray now includes an additional condition in his categorization algorithm that moves programs from the Canadian claimant category back to the JSC category.

(46)   Second, Dr. Gray fails to consider whether a program was syndicated before assigning it to the Devotional category. In his algorithm, Dr. Gray simply assigns all of the "Religious" programs airing on US broadcast stations to the Devotional category.[24] As a result, non-syndicated religious programs ~~were~~are incorrectly assigned to the Devotional category rather than to the CTV category.

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[23]   Based on Dr. Gray's Underlying Materials, I counted at least 2,900 live telecasts of professional and college team sports ~~in~~originally assigned to Dr. Gray's Canadian category.

[24]   Dr. Gray uses Gracenote's program type field to determine whether a program is "Religious." Dr. Gray subsequently moves some of these programs to the Program Supplier category; however, he never corrects his mis-categorization of non-syndicated religious programs.

VI. Dr. Gray's distant viewing analysis is flawed and unreliable

(47)   Even if Dr. Gray's samples were reliable—which they are clearly not—his measure of distant viewership for compensable programs carried by stations in his samples is flawed and unreliable. Moreover, the royalty shares Dr. Gray extrapolates from his unreliable samples based on his invalid viewing measure are invalid and unreliable.

VI.A. Dr. Gray relies on an imputed measure of distant viewership in place of Nielsen's reported measure of viewership

(48)   In Table 2 of his report, Dr. Gray reports his extrapolated distant viewing levels and shares. When performing these calculations, however, Dr. Gray does not use the distant household viewing counts or households weights as reported by Nielsen for the compensable programs carried by stations in his samples. Instead, Dr. Gray relies on his own (unweighted) estimates of distant viewing.

(49)   Dr. Gray purportedly resorts to estimating (or imputing) distant viewing records because "there are many instances of no recorded distant viewing of compensable retransmitted programs in the Nielsen Household Meter Data."[25] In fact, as shown in Figure 16 below, Dr. Gray is without any distant viewing record for more than 90% of the programming in his samples, and he is without any local viewing records for more than 55% of the programming in his samples.

Figure 16: Volume of programming with no viewership data

Year	Volume of programming (by quarter hours) in Dr. Gray's database	Percent with no distant viewing record	Percent with no local viewing record
2010	4,218,107	93.10%	58.56%
2011	4,403,291283	94.21%	59.23%
2012	4,269,586580	93.76%	63.12%
2013	4,523,526946	95.32%	64.9%

(50)   To impute the missing distant viewing records, which accounted for more than 90% of his data, Dr. Gray relies on a regression that relates distant viewing to a measure of local viewing, and other controls.[26] Then, without explanation or support, Dr. Gray uses this same regression to replace the

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[25]   Gray Report, ¶ 35.

[26]   Beyond his measure of local viewing, Dr. Gray includes the (log of) distant subscribers, the quarter hour in which a program aired, and Gracenote's program type as controls in his regressions.

actual distant viewing records as provided by Nielsen, meaning that Dr. Gray imputes 100% of the distant viewing values that he relies on in his extrapolation.[27]

(51)   The fact that Dr. Gray relies entirely on his own (flawed) estimates—thereby supplanting all of the actual viewing data provided by Nielsen—further undermines the reliability of his viewing analysis.

VI.B. Dr. Gray's imputed measure of distant viewership is flawed and unreliable

(52)   Dr. Gray claims that he could "obtain reliable estimates of distant viewing" from a regression analysis that estimates the relationship between distant viewing for a program and a measure of local viewing for the program, plus other controls. Of course, one needs data on distant viewing and local viewing in order to estimate a relationship between these variables.

(53)   With relatively few records for both distant and local viewing, Dr. Gray tops up his regression data set by replacing missing distant and local viewing records with zeros. Indeed, Figure 17 shows that the bulk of the programming in Dr. Gray's regression analysis is without a distant viewing record, without a local viewing record, or without both. The top row of the figure, for example, shows that more than 50% of the programming in Dr. Gray's regression data set was without any information at all on local and distant viewing. For this programming, Dr. Gray replaces the missing local and distant viewing with zeros. The second and third rows show programming for which Nielsen provided Dr. Gray with a local or distant viewing record, but not both. For this programming, Dr. Gray replaces the missing record with a zero. Finally, the fourth row shows the small subset of Dr. Gray's regression database that reflected actual distant and local viewing records as provided by Nielsen.

Figure 17: Distribution of samples included in Dr. Gray's regressions

Missing distant	Missing local	2010	2011	2012	2013
Yes	Yes	1,790,~~734~~766	1,~~812,993~~813,182	1,889,~~602~~720	1,983,~~710~~857
Yes	No	1,~~532,078~~526,462	1,~~599,705~~594,928	1,~~384,072~~380,383	1,~~439,102~~435,750
No	Yes	~~69,339~~74,006	~~58,645~~62,594	~~77,890~~80,992	~~64,049~~67,489
No	No	~~219,716~~220,633	~~197,824~~198,461	190,~~094~~557	149,~~723~~914

(54)   Dr. Gray's practice of equating missing records with zero viewing lacks foundation and undermines the reliability of his regression analysis. First, Dr. Gray offers no logical explanation for why zero might be the correct value to use in place of a missing record. If anything, Dr. Gray suggests that records were missing "[d]ue to the low frequency of distant viewing and the size of the sample

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[27]   Dr. Gray "employed multiple regression analysis techniques and applied [his] analysis to the [*sic*] *all* programs eligible for compensation." [Gray Report, ¶ 36] (emphasis added)

Nielsen uses to measure total U.S. household viewing,"[28] meaning that the true viewing associated with missing records may be something other than zero. Second, Dr. Gray offers no explanation for the apparent contradiction that arises from this practice: either the missing values truly correspond to zero viewing and the regressions serve no purpose—why estimate a known quantity—or the true values of the missing records potentially differ from zero, in which case Dr. Gray has imposed an incorrect assumption that biases the estimated relationship between distant and local viewing.[29]

VI.C. Dr. Gray's "measure" of local viewing is flawed and unreliable

(55) A key variable in Dr. Gray's regressions is "a measure of local viewing" for a program.[30] However, nowhere in his report does Dr. Gray elaborate on exactly what his "measure" of local viewing is; nor does Dr. Gray explain how it could possibly be calculated when the majority of programming in his sample is without a local viewing record.

(56) Dr. Gray's reference to a "measure of local viewing" is misleading, since the variable that he includes in his regression is, in fact, not a reliable measure of local viewing. To see why, consider first that Dr. Gray calculates his "measure" of local viewing based on the ratio of local viewing—when local viewing was available—to the total number of subscribers (local *and* distant) that received a station. Dr. Gray's inclusion of distant subscribers in his "measure" of local viewing means that, all else equal, he will assign higher local viewing to a station with the fewest distant subscribers, and vice versa. For example, Dr. Gray calculates his "measure" of local viewing for a compensable program that aired on WGN in 2010 as the (unweighted) number of local viewing households reported by Nielsen divided by 46,389,224, which includes 41,361,722 distant subscribers reported by the CDC.

(57) Dr. Gray is unable even to calculate that counterintuitive "measure" from the Nielsen data for more than half of the programming in his database. For the bulk his data—i.e., for programming in his regression database with no local viewing data—Dr. Gray was provided with no record for local viewing and he simply equates missing local viewing with zero viewing.[31]

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[28] Gray Report, ¶ 35,

[29] All else equal, replacing missing observations with zeros alters Dr. Gray's regression estimates and his shares of distant viewing.

[30] Gray Report, ¶ 36.

[31] As noted in Figure 17, Dr. Gray excludes from his regressions station programming that was without a single local viewing record in a given year. In his extrapolation, however, Dr. Gray includes such programming by assuming that the number of local viewing households was equal to the average local viewing for all other programs of the same type that aired at the same time.

VI.D. Dr. Gray does not use sampling weights when estimating his econometric model

(58)   When estimating his regressions, Dr. Gray does not use the sampling weights (however flawed) that he calculated for the stations in his samples. As a result, Dr. Gray's regressions summarize the relationship among variables in his sample as if the unweighted stations in his sample are an accurate representation of the whole population, which they are not.

(59)   It is well known that ignoring sampling weights produces biased estimates of population parameters (in this case programming volume, viewing, and shares). For example, an article in *The Stata Journal* succinctly states:

> If sampling weights are ignored, then the sampling distributions of unweighted statistics underrepresent the values of the random variables associated with low selection probabilities and overrepresent the values associated with high selection probabilities. As a result, unweighted statistics are biased for population parameters they estimate. The effects of clustering and unequal weights are detrimental for statistical inference and so analysts and researchers need to account for them.[32]

(60)   To assess the impact of including Dr. Gray's sampling weights in his regressions, I re-estimated his models with his sampling weights included. Figure 18 shows that the inclusion of Dr. Gray's sampling weights in his regressions would materially alter his royalty shares, resulting in particular in a reduction in the Program Suppliers share. It is important to note, however, that correction of this methodological error still does not produce valid or reliable viewing shares, in light of Dr. Gray's other errors.

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[32] Kolenikov, S. "Resampling variance estimation for complex survey data". *The Stata Journal*, Vol. 10, No. 2, 2010, p. 167.

Figure 18: Dr. Gray's implied royalty shares using his sampling weights (~~original~~ shares without sampling weights in parentheses)

Year	Canadian	CTV	Devotional	Program suppliers	PTV	JSC
2010	2.0~~5~~18% (1.~~96~~66%)	~~23.89%~~ (~~15.83~~27.53% (21.27%)	~~0.83%~~ (~~1.18~~14% (1.41%)	38.98% (44.~~87%~~ (50.~~94~~66%)	~~26.44%~~ (~~27.96~~24.03% (24.12%)	~~1.92%~~ (~~2.13~~6.15% (6.88%)
2011	4.~~86~~64% (3.~~93~~38%)	~~12.37%~~ (~~12.06~~19.80% (19.68%)	1.~~62~~32% (~~2.44~~1.72%)	~~44.12%~~ (~~49.92~~35.94% (41.80%)	~~33.83%~~ (~~29.09~~28.47% (24.26%)	~~3.21%~~ (~~2.57~~9.83% (9.16%)
2012	5.~~29~~16% (3.~~58~~21%)	~~21.15%~~ (~~15.48~~26.61% (23.50%)	0.6~~1~~58% (~~1.07~~0.91%)	~~28.53%~~ (~~36.17~~26.68% (33.49%)	~~41.79%~~ (~~41.64~~35.65% (33.54%)	~~2.63%~~ (~~2.06~~5.32% (5.35%)
2013	4.04% (~~3.86%~~ (~~5.31~~80%)	~~13.75%~~ (~~10.64~~17.26% (18.17%)	1.4~~3~~20% (~~1.09~~0.88%)	~~48.60%~~ (~~44.69~~46.79% (43.52%)	~~29.41%~~ (~~33.47~~25.49% (26.48%)	~~2.96%~~ (~~4.80~~5.21% (7.15%)

VI.E. Dr. Gray's imputed measure is demonstrably biased

(61) To assess the reliability of Dr. Gray's measure of distant viewership, I examined how his estimates compared with the records provided by Nielsen. This comparison reveals a bias in Dr. Gray's estimates that further undermines the reliability of his royalty share calculations.

(62) First, by looking at individual stations, it is apparent that Dr. Gray's regression estimates suggest a significant number of distant viewing households for some stations where the Nielsen data had recorded few or none. For example, as illustrated in Figure 19 below, Dr. Gray's regression estimates produce a significant number of distant viewing households for WSJX-LP, which had zero distant viewing records in the Nielsen sample.

Figure 19: Number of distant viewing household quarter-hours of compensable WSJX-LP programming

Year	~~Nielson~~Nielsen	Dr. Gray
2010	0	~~9,426~~71,804,150
2011	0	~~6,723~~52,564,262
2012	0	~~4,917~~40,599,758
2013	--	--

Notes: The figures represent the total number of distant household quarter hours viewed of compensable WSJX-LP programming in a given year, as reported by Nielsen and estimated by Dr. Gray. The totals are missing for 2013 because Dr. Gray does not sample WSJX-LP in 2013.

(63) For other stations, Dr. Gray's regression estimates are substantially lower than the distant viewing that was reported by Nielsen. For example, as illustrated in Figure 20 below, Dr. Gray's regression estimates for WJZ-DT produce significantly lower distant viewing than the Nielsen sample in 2010 and 2013, thereby eliminating distant viewing households that were actually measured and reported

by Nielsen. Dr. Gray simply has no basis for eliminating households and presenting a so-called "reliable measure of distant viewership" that is *less* than what was *actually* measured and reported by Nielsen.

Figure 20: Number of distant viewing household quarter-hours of compensable WJZ-DT programming

Year	~~Nielson~~Nielsen	Dr. Gray
2010	~~7,432~~33,413,615	~~2,129~~18,757,326
2011	~~-~~.	~~-~~.
2012	~~2,400~~9,277,308	~~1,843~~15,297,840
2013	~~2,588~~10,074,053	~~1,390~~9,957,033

Notes: The figures represent the total number of distant households that viewed compensable WJZ programming in a given year, as reported by Nielsen and then as estimated by Dr. Gray. The totals are missing for 2011 because Dr. Gray does not sample WJZ in 2011.

(64)   Not only do Dr. Gray's regression estimates create new viewing households and eliminate others, they do so in a manner that benefits certain claimants' supposed viewing shares while reducing other claimants' shares. Figure 21 below, for example, shows that, relative to the Nielsen survey, Dr. Gray's reliance on his regression estimates substantially increases the number of distant viewing households for Program Suppliers and PTV content in most years, while decreasing the total number of distant viewing households in ~~some~~two out of the four years for CTV ~~and Canadian~~ content.

Figure 21: Aggregate difference between distant household quarter hours estimated by Dr. Gray and reported by Nielsen

Year	~~Program Suppliers~~Canadian	~~JSC~~CTV	~~CTV~~Devotional	~~PTV~~Program Suppliers	~~Devotional~~PTV	~~Canadian~~JSC
2010	~~9,070~~165,587,954	~~-37,111~~787,790,202	~~11,549~~81,063,209	~~306,228~~1,294,933,310	~~115,271~~285,926,204	~~16,230~~137,289,065
2011	~~27,912~~227,135,651	~~54,637~~198,244,878	~~23,696~~102,615,257	~~287,194~~1,062,420,524	~~95,615~~438,452,613	~~16,867~~124,413,988
2012	~~-24,370~~106,544,899	~~55,642~~154,301,533	~~10,225~~59,287,717	~~237,623~~1,197,265,767	~~187,807~~655,241,813	~~6,114~~56,021,704
2013	~~29,027~~213,372,030	~~-7,937~~156,665,710	~~4,927~~5,672,037	~~75,238~~-531,679,612	~~66,073~~331,005,817	~~17,173~~79,740,425
Total	~~41,638~~712,640,534	~~65,232~~-591,909,501	~~50,398~~248,638,219	~~906,282~~3,022,939,988	~~464,767~~1,710,626,447	~~56,384~~397,465,182

Notes: The figures represent the difference in the extrapolated number of household quarter hours. A negative number indicates that Dr. Gray's estimated number of distant viewing household quarter hours is lower than the number actually reported by Nielsen. Dr. Gray's estimated numbers now reflect Nielsen-weighted household counts, but do not incorporate Nielsen data on the actual amount of viewing done in these distant households.

(65)   Figure 22 shows the percentage point difference in the implied shares between Dr. Gray's estimated number of distant viewing households and the number of distant viewing households actually measured by Nielsen. For example, the figure shows that, relative to the actual distant viewing reported by Nielsen, Dr. Gray's imputation increased the Program Suppliers' share of distant viewing in 2010 by ~~11~~8.98 percentage points. Similarly, in the same year, Dr. Gray's imputation decreased the

CTV's share of distant by 11.~~23~~49 percentage points relative to the share implied by the actual distant viewing reported by Nielsen.

Figure 22: Aggregate difference between distant household quarter hour shares estimated by Dr. Gray and reported by Nielsen

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	~~0.30~~1.54%	-11.~~23~~49%	0.~~80~~74%	~~11~~8.98%	-~~2.08~~0.44%	0.~~83~~66%
2011	1.~~64~~2.58%	-0.~~76~~3.26%	1.~~89~~07%	~~8.03~~3.21%	-~~11.04~~2.66%	-0.~~24~~95%
2012	-~~5.62~~0.40%	-~~1.68~~4.75%	0.~~76~~60%	~~9.75~~6.91%	-2.~~87~~41%	-0.~~33~~74%
2013	~~3.03~~2.96%	-~~4.07~~2.01%	0.~~40~~09%	-~~0.41~~6.96%	-0.~~32~~4.78%	1.~~37~~15%

Notes: The figures represent the difference in the extrapolated share of household quarter hours. A negative number indicates that Dr. Gray's imputation reduced the share relative to the share implied by the ~~viewing~~weighted household counts actually reported by Nielsen.

(66) Thus, by relying on his regression estimates, Dr. Gray disproportionately increases distant viewing for some claimants while reducing the number of distant viewing households *below* what was actually measured for others. This is clear evidence that Dr. Gray's regression estimates, and the royalty shares derived from them, are biased and unreliable.

VI.F. Dr. Gray's 95% confidence intervals are invalid

(67) In Table C-5 of his written testimony, Dr. Gray presents 95% confidence intervals associated with each of his distant viewership share estimates. These intervals are calculated incorrectly and give the mistaken impression that Dr. Gray's viewership shares are precisely estimated.

(68) There are at least two fundamental problems with Dr. Gray's calculation of his confidence intervals.[33] First, Dr. Gray treats his data as if they were obtained from a simple random sample, thereby ignoring the additional sampling error inherent in his use of cluster sampling. Second, Dr. Gray treats the imputed values (zeros) in his regressions as if they are the true observed values.

(69) As noted in Section (29)~~,~~ the statistical software package that Dr. Gray used in his analysis is equipped to handle complex sampling designs. This makes it easy to calculate a 95% confidence interval for each of Dr. Gray's royalty share estimates that properly accounts for Dr. Gray's use of

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[33] To support the bootstrap resampling procedure that he uses to calculate his confidence intervals, Dr. Gray cites Efron and Tibshirani (1986). However, this article contains no mention of appropriate bootstrap procedures for handling imputed data or complex sampling designs. With clustered data, for example, modifications to the classical (i.i.d.) bootstrap are necessary as "[i]t is important that the resampling be done over entire clusters rather than over individual observations." (A. Colin Cameron and D. L. Miller, "A Practitioner's Guide to Cluster-Robust Inference," *Journal of Human Resources* 50, no. 2 (2015): 328.)

cluster sampling. While not a complete accounting of all sources of uncertainty, this calculation enables us to assess how accounting for one element of uncertainty—Dr. Gray's sampling design—affects the width of his confidence intervals.

Figure 23: Confidence intervals for Dr. Gray's shares with his distant viewing estimates treated as true observations.

Year	Canadian	CTV	Devotional	Program Suppliers	PTV	JSC
2010	1.~~96~~66% ± 1.~~68~~51%	~~15.83~~ 21.27% ± ~~3.32~~7.56%	1.~~18~~41% ± 0.71%	~~50.94~~ 44.66% ± ~~7.45~~9.22%	~~27.96~~ 24.12% ± ~~8.65~~9.97%	~~2.13~~ 6.88% ± ~~17~~.10%
2011	3.~~93~~38% ± 3.~~32~~01%	~~12.06~~ 19.68% ± ~~2.62~~11.27%	2.~~44~~ 1.72% ± 1.~~95~~09%	~~49.92~~ 41.80% ± ~~7.67~~12.19%	~~29.09~~ 24.26% ± ~~8.52~~10.12%	~~2.57~~ 9.16% ± ~~1.23~~8.38%
2012	3.~~58~~21% ± 2.~~61~~49%	~~15.48~~ 23.50% ± ~~5.1~~0.86%	~~1.07~~ 0.91% ± ~~1.13~~0.84%	~~36.14~~ 33.49% ± 8.~~68~~90%	~~41.64~~ 33.54% ± ~~10.49~~11.28%	~~2.09~~ 5.35% ± ~~1.02~~3.89%
2013	~~5.31~~ 3.80% ± 3.~~77~~2.86%	~~10.64~~ 18.17% ± ~~2.48~~11.69%	~~1.09~~ 0.88% ± 0.~~86~~73%	~~44.69~~ 43.52% ± ~~7.47~~11.21%	~~33.47~~ 26.48% ± ~~8.71~~9.64%	~~4.80~~ 7.15% ± 3.~~04~~16%

(70) Figure 23 shows that the MOEs that take account of Dr. Gray's sampling design are much larger than what he reports in his written testimony. Figure 24 expresses the same MOEs as confidence intervals, which can be compared directly to Dr. Gray's Table C-5. The very substantial differences resulting from properly accounting only for Dr. Gray's sampling design demonstrate the unreliability of Dr. Gray's reported confidence intervals and indicate more accurately the very substantial imprecision of his estimated viewing shares. Properly accounting for Dr. Gray's imputation of distant and local viewing records as well would only further broaden these confidence intervals.[34]

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[34] It is known that bootstrap procedures that incorrectly treat imputed values as the true observed values underestimate variance and produce invalid confidence intervals that are too narrow. *See, e.g.,* Jun Shao and Randy R. Sitter, "Bootstrap for Imputed Survey Data," *Journal of the American Statistical Association* 91, no. 435 (1996): 1278.

Figure 24. Confidence intervals for Dr. Gray's shares with his distant viewing estimates treated as true observations

Claimant	2010	2011	2012	2013
Canadian Claimants	0.2815% - 3.6417%	0.60% - 7.2537% - 6.39%	0.97% - 6.2072% - 5.70%	1.54% - 9.080.94% - 6.66%
Commercial Television	12.51% - 19.15%13.71% - 28.84%	9.44% - 14.68%8.42% - 30.95%	10.38% - 20.59%12.63% - 34.36%	8.16% - 13.12%6.48% - 29.86%
Devotionals	0.47% - 1.8970% - 2.12%	0.49% - 4.3963% - 2.81%	-0.06% - 2.2007% - 1.75%	0.2315% - 1.9561%
Program Suppliers	43.49% - 58.39%35.44% - 53.89%	42.25% - 57.59%29.61% - 53.99%	27.46% - 44.82%24.59% - 42.39%	37.22% - 52.16%32.31% - 54.72%
Public Television	19.31% - 36.60%14.14% - 34.09%	20.57% - 14.14% - 34.37.61%	31.15% - 52.13%22.27% - 44.82%	24.76% - 42.18%16.84% - 36.12%
JSC	1.03% - 3.23%0.00% - 13.98%	1.34% - 3.79%0.78% - 17.54%	1.07% - 3.1146% - 9.24%	1.79% - 7.81%3.99% - 10.32%

(71)   It is important to note that corrections to Dr. Gray's erroneous confidence intervals do not address the other substantial flaws in the design and execution of his study, discussed above, that result in biased and unreliable point estimates.

VI.G. Dr. Gray's revised imputation procedure fails to correct obvious biases

(72)   In the January 2018 Gray Report, Dr. Gray modifies the regression procedure that he uses to impute values of distant household quarter-hours of viewing. In particular, whereas Dr. Gray had originally reported imputed values derived from a single regression for each year, he now reports imputed values derived from two separate regressions for each year: one regression for WGN and another regression for all other stations in his regression dataset.

(73)   Dr. Gray switched to using separate regressions for WGN and non-WGN stations each year from 2010-2013, purportedly because of "the large difference between WGN and non-WGN stations in terms of the extent of non-compensable programming, the number of distant subscribers, and the level of distant viewing."[35] However, the extent of non-compensable programming and the number of distant subscribers are unchanged from the Gray Report.

(74)   Irrespective of any changes to his underlying data and regression specification, Dr. Gray's practice of replacing the actual values reported by Nielsen with his own imputed values lacks foundation or support. For example, Dr. Gray offers no explanation or support for replacing *all* of the actually measured data for WGN with his own imputed values despite receiving updated data from Nielsen

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[35]   January 2018 Gray Report, fn. 30.

that contains distant household quarter-hour viewing data for *all* observations in 2011-2013 and all but 4 of 5,623 observations in 2010.

(75) The effect of Dr. Gray's switch to his new split-regression imputation procedure ("January 2018 Imputation") can be seen by comparing his new results to those obtained by applying his original single-regression imputation procedure to his updated data ("Single Regression Imputation"). This comparison, which is displayed in Figure 25, shows that Dr. Gray's January 2018 Imputation disproportionately increases the number of distant household quarter-hours imputed for the Program Suppliers claimants by comparison to the results of applying his original regression approach to his new data.

(76) Figure 25 also shows that Dr. Gray's January 2018 Imputation produces dramatic increases for Program Suppliers relative to the actual levels of weighted viewing household quarter hours reported by Nielsen for 2010, 2011, and 2012, while at the same time imputing levels of weighted viewing household quarter hours for CTV *below* the actual levels reported by Nielsen in 2010, 2012, and 2013.[36]

Figure 25: Distant viewing household quarter-hours for all stations: January 2018 Nielsen vs. Dr. Gray's Single Regression Imputation and January 2018 Imputation

Year	Claimant	January 2018 Nielsen	January 2018 Imputation	Single Regression Imputation
2010	Canadian	39,029,666	150,412,151	176,230,934
	CTV	2,404,776,283	1,926,448,507	1,538,755,960
	Devotional	42,330,050	127,734,088	160,816,411
	Program Suppliers	2,661,578,082	4,044,541,411	2,925,008,637
	PTV	1,688,628,697	2,183,929,113	1,804,354,033
	JSC	520,157,521	622,863,267	545,480,874
	Total	**7,356,500,300**	**9,055,928,536**	**7,150,646,850**
2011	Canadian	30,485,140	257,620,791	294,274,023
	CTV	1,356,148,817	1,501,042,617	1,307,079,320
	Devotional	35,998,672	131,269,192	108,588,358
	Program Suppliers	2,262,069,676	3,187,300,264	2,210,920,744
	PTV	1,581,109,568	1,849,697,251	1,627,462,126
	JSC	588,770,202	698,443,656	590,098,362
	Total	**5,854,582,075**	**7,625,373,770**	**6,138,422,933**
2012	Canadian	31,578,775	250,425,806	322,865,002
	CTV	1,842,517,668	1,833,992,106	1,456,864,872
	Devotional	13,033,437	70,897,418	45,503,933
	Program Suppliers	1,681,050,984	2,614,022,438	1,773,076,961
	PTV	2,218,368,425	2,618,043,884	1,878,922,995
	JSC	337,204,497	417,592,175	329,273,993

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[36] Dr. Gray computed extrapolated viewing levels from the actual Nielsen records and saved these values in his January 2018 Underlying Materials, which he produced. See "an_cable_10.log", "an_cable_11.log", "an_cable_12.log", and "an_cable_13.log".

	Total	**6,123,753,785**	**7,804,973,828**	**5,806,507,755**
	Canadian	28,736,927	236,713,153	306,088,235
	CTV	1,236,818,238	1,132,947,152	938,720,745
	Devotional	54,464,471	54,763,752	33,256,272
2013	Program Suppliers	3,330,799,645	2,713,378,344	1,708,574,861
	PTV	1,347,091,558	1,651,304,941	1,286,334,547
	JSC	380,314,382	446,131,307	334,113,755
	Total	**6,378,225,221**	**6,235,238,649**	**4,607,088,416**

Notes: "January 2018 Nielsen" is the extrapolated number of weighted Nielsen household quarter hours in which viewing is observed, as reported in Dr. Gray's January 2018 Underlying Materials; "January 2018 Imputation" is the imputed number of weighted household quarter hours calculated by applying Dr. Gray's revised split-regression approach to his data from the January 2018 Underlying Materials; "Single Regression Imputation" is the imputed number of weighted household quarter hours calculated by applying Dr. Gray's original regression to his data from the January 2018 Underlying Materials.

(77)   Finally, while continuing to produce obvious biases in levels, as shown in Figure 26~~Figure 25~~ above, the ultimate impact of Dr. Gray's January 2018 Imputation is even more evident in the overall shares that it produces. Figure 26 presents the shares reported in the original Gray Report, the shares derived from actual Nielsen weighted household quarter hours in the January 2018 Underlying Materials, the shares reported in the January 2018 Gray Report, and the shares that result from using Dr. Gray's original regression approach with the data from the January 2018 Underlying Materials. The comparison shows that, while Dr. Gray's January 2018 Imputation produces reduced shares for Program Suppliers relative to his original shares ("April 2017 Imputation"), his use of his new regression approach dramatically increases the Program Suppliers share in each and every year while at the same time decreasing the Canadian, CTV, and JSC shares in each and every year, relative to the shares that would result from applying his original regression approach to his new data.

Figure 26: Dr. Gray's extrapolated distant household quarter-hour shares: January 2018 Nielsen vs. Dr. Gray's April 2017 Imputation, Single Regression Imputation, and January 2018 Imputation

Year	Claimant	April 2017 Imputation	January 2018 Nielsen	January 2018 Imputation	Single Regression Imputation
2010	Canadian	1.96%	0.53%	1.66%	2.46%
	CTV	15.83%	32.69%	21.27%	21.52%
	Devotionals	1.18%	0.58%	1.41%	2.25%
	Program Suppliers	50.94%	36.18%	44.66%	40.91%
	PTV	27.96%	22.95%	24.12%	25.23%
	JSC	2.13%	7.07%	6.88%	7.63%
2011	Canadian	3.93%	0.52%	3.38%	4.79%
	CTV	12.06%	23.16%	19.68%	21.29%
	Devotionals	2.44%	0.61%	1.72%	1.77%
	Program Suppliers	49.92%	38.64%	41.80%	36.02%
	PTV	29.09%	27.01%	24.26%	26.51%
	JSC	2.57%	10.06%	9.16%	9.61%
2012	Canadian	3.58%	0.52%	3.21%	5.56%
	CTV	15.48%	30.09%	23.50%	25.09%
	Devotionals	1.07%	0.21%	0.91%	0.78%
	Program Suppliers	36.17%	27.45%	33.49%	30.54%
	PTV	41.64%	36.23%	33.54%	32.36%
	JSC	2.06%	5.51%	5.35%	5.67%
2013	Canadian	5.16%	0.45%	3.80%	6.64%
	CTV	10.61%	19.39%	18.17%	20.38%
	Devotionals	1.10%	0.85%	0.88%	0.72%
	Program Suppliers	45.09%	52.22%	43.52%	37.09%
	PTV	33.29%	21.12%	26.48%	27.92%
	JSC	4.76%	5.96%	7.15%	7.25%

Notes: "April 2017 Imputation" are shares reported in the original Gray Report; "January 2018 Nielsen" are shares based on the extrapolated number of weighted Nielsen household quarter hours in which viewing is observed, as reported in Dr. Gray's January 2018 Underlying Materials; "January 2018 Imputation" are shares based on Dr. Gray's imputed number of weighted household quarter hours calculated by applying his revised split-regression approach to his data from the January 2018 Underlying Materials; "Single Regression Imputation" are shares based on the imputed number of weighted household quarter hours calculated by applying Dr. Gray's original regression to his data from the January 2018 Underlying Materials.

VII. Program Suppliers Witness Howard Horowitz Miscategorizes a Number of Programs in His Cable Operator Survey Instrument

(71)(78)　Counsel for CTV asked me to review the programs specified by Program Supplier witness Howard Horowitz[37] in certain portions of his survey questionnaires and to evaluate whether they were identified in connection with the correct program category. I understand that, in the 2012 and 2013 versions of Mr. Horowitz's questionnaires that were administered to cable respondents who carried WGN as their only distant signal, the respondents were told, immediately after being read the definition of the category of "syndicated series" broadcast on WGN, that "examples include programs such as" (a) "30 Rock, Adelante Chicago, People to People, and MDA Show of Strength" in 2012 and (b) "30 Rock, Adelante Chicago, Everybody Loves Raymond, and People to People" in 2013.

(72)(79)　Based on the programming information available to me, which I used to perform the categorizations described in my Written Direct Testimony in this proceeding, the two programs "Adelante Chicago" and "People to People" that aired on WGN in 2012 and 2013 are properly categorized as CTV programs, not Program Suppliers or syndicated programs. They aired only on WGN, and did not air on other stations.

(73)(80)　I also understand that, in the 2011, 2012, and 2013 versions of Mr. Horowitz's questionnaires that were administered to cable respondents who carried WGN as their only distant signal, the respondents were asked to estimate the relative value, along with program categories, of "Other sports programming broadcast on WGN. Examples include Horse Racing." Mr. Horowitz considered responses regarding "Other Sports Programming" to be attributable to the Program Suppliers category, along with responses regarding "Movies" and "Syndicated Series."[38]

(74)(81)　Based on the programming information available to me, which I used to perform the categorizations described in my Corrected Written Direct Testimony in this proceeding, the only compensable Horse Racing program that aired on WGN in 2011, 2012, and 2013 was the annual Arlington Million race, which is properly categorized as a CTV program, not a Program Suppliers or syndicated program. The annual horse races aired only on WGN, and did not air on other stations.

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[37]　Corrected Direct Testimony of Howard Horowitz, filed April 25, 2017 ("Horowitz").

[38]　*See* Horowitz, pp 15-16.

VIII. Data Analyses Regarding Distant Signal Carriage and Viewing

(75)(82) I was also asked by counsel for CTV to perform a number of data analyses in order to provide charts that could be referred to in the testimony of other CTV Rebuttal witnesses.

(76)(83) Figure 27~~Figure 25~~ below, which is based on CDC's carriage data, plots the average number of distant signals by the number of local signals at the CSO-community level during 2010-2013.

Figure 27: Relationship between the number of distant signals and local signals offered by a cable system in each cable community during 2010-2013
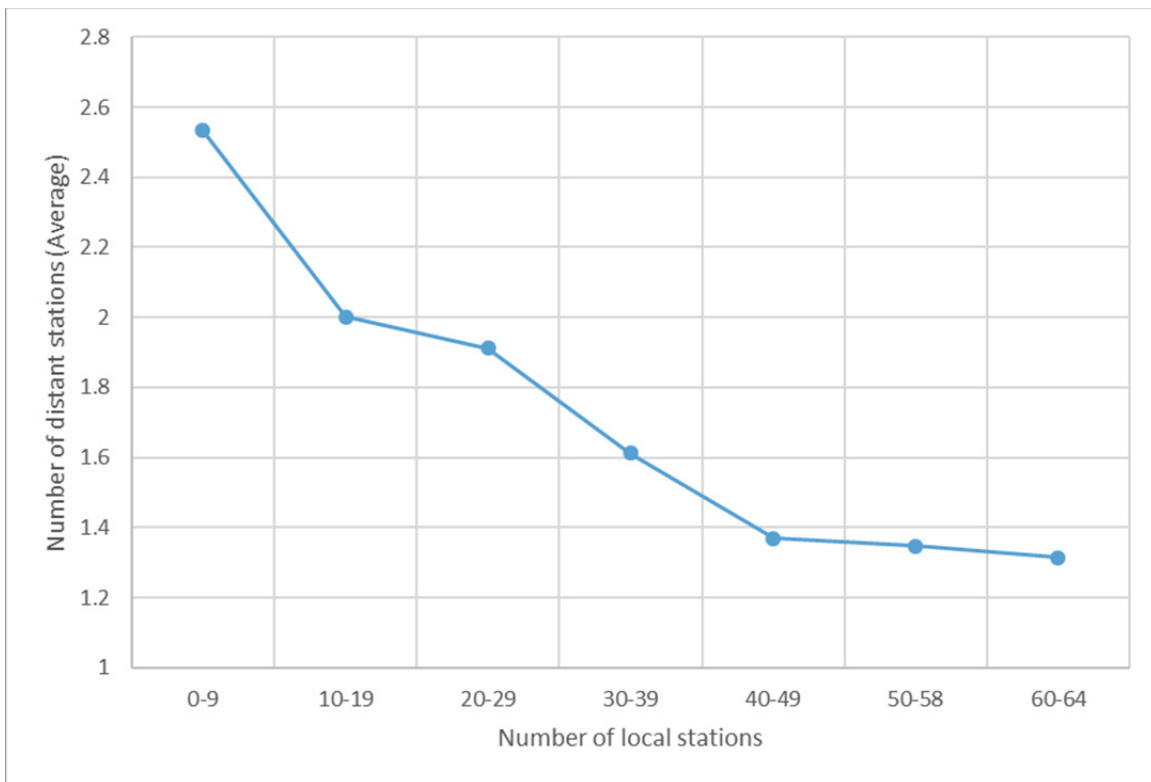
Source: CDC Data

(77)(84) Figure 28~~Figure 26~~ below shows the average number of distant and local stations offered by CSOs within DMAs, grouped by DMA rankings.

Figure 28: Average offering of distant and local signals grouped by DMA ranking, 2010-2013
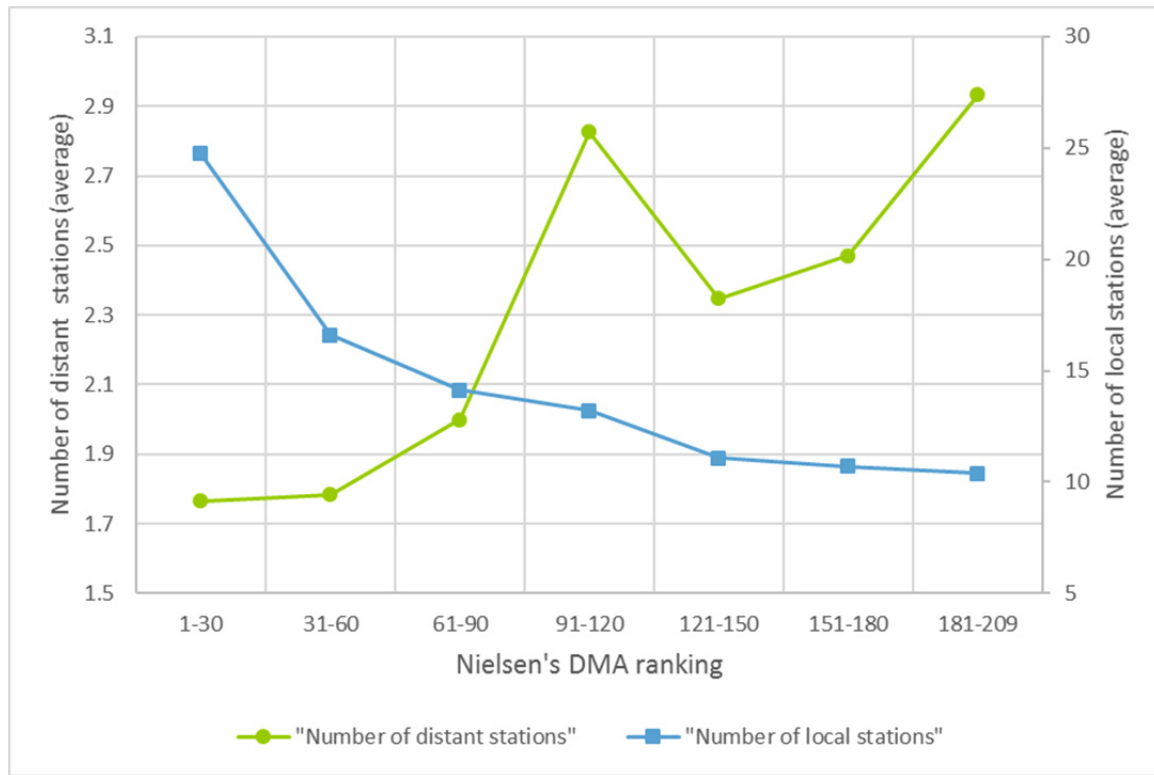
Source: CDC Data, Nielsen Local Television Market Universe Estimates 2009-2010, 2010-2011, 2011-2012, 2012-2013.

(78)(85) Figure 29~~Figure 27~~ is an analysis of data presented in Appendix C to a report of the FCC regarding the availability of out-of-market signals.[39] Appendix C listed all DMAs in which Nielsen reported viewing to signals from other DMAs in November 2015, along with the stations that were viewed and their home markets.[40] Figure 29 ~~Figure 27~~ shows the count of DMAs with at least one viewed out-of-market signal and the total count of viewed out-of-market signals within DMAs, grouped by DMA rank as of November 2015. The figure shows generally that the incidence of reported viewing, and the number of out-of-market signals that were reported as viewed, increased as the DMA size grew smaller (i.e., increased in rank).

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[39]   *See In re Designated Market Areas: Report to Congress Pursuant to Section 109 of the STELA Reauthorization Act of 2014.* MB Docket No. 15-43. June 3, 2016; FCC Report DA 16-613 ("FCC Report"), Appendix C: *Viewership of Out-of-Market Signals Based on Nielsen Market Data,* 195–249.

[40]   Nielsen reported viewing for out-of-market signals only where they exceeded a minimum threshold "cume" rating of 9.5. *See* FCC Report, ¶ 58.

Figure 29: Out-of-market signals viewed and DMA, by DMA rank 2015

Source: FCC Report, Nielsen Local Television Market Universe Estimates effective September 26, 2015.

Appendix A. Duplicate Station Analysis

Figure 30. List of duplicated stations in Dr. Gray's sampling frame by year

Year	Station	In sample	Weight
2010	CBAT	No	13.48
2010	CBAT-DT	No	28.73
2010	CBET	No	2.24
2010	CBET-DT	No	5.27
2010	CBFT	No	2.24
2010	CBFT-DT	No	2.24
2010	CBMT	No	2.24
2010	CBMT-DT	Yes	1.00
2010	CBUT	Yes	1.00
2010	CBUT-DT	Yes	1.00
2010	CBWT	No	5.27
2010	CBWT-DT	Yes	5.27
2010	CFCF	No	28.73
2010	CFCF-DT	No	28.73
2010	CFTM	No	28.73
2010	CFTM-DT	No	28.73
2010	CFTO	No	2.24
2010	CFTO-DT	Yes	2.24
2010	CHLT	Yes	2.24
2010	CHLT-DT	No	13.48
2010	CICA	No	5.27
2010	CICA-DT	No	5.27
2010	CJOH	No	13.48
2010	CJOH-DT	No	13.48
2010	CKSH	No	2.24
2010	CKSH-DT	Yes	1.00
2010	CKWS	No	2.24
2010	CKWS-DT	Yes	2.24
2010	CKY	No	28.73
2010	CKY-DT	No	28.73
2010	KBYU	Yes	28.73
2010	KBYU-DT	No	13.48
2010	KCET	No	13.48
2010	KCET-DT	Yes	1.00
2010	KCET-HD	No	28.73
2010	KERA	No	28.73

Year	Station	In sample	Weight
2010	KERA-DT	Yes	2.24
2010	KETK	No	28.73
2010	KETK-DT	No	28.73
2010	KLRN-DT	Yes	2.24
2010	KLRN-HD	No	13.48
2010	KOCE-DT	No	5.27
2010	KOCE-HD	No	28.73
2010	KOMU-DT	No	28.73
2010	KOMU-HD	No	28.73
2010	KQEH	No	13.48
2010	KQEH-DT	No	2.24
2010	KVCR-DT	No	13.48
2010	KVCR-HD	No	13.48
2010	KWCM	No	28.73
2010	KWCM-DT	No	28.73
2010	KYTX	No	28.73
2010	KYTX-DT	No	28.73
2010	WADL	No	28.73
2010	WADL-DT	No	28.73
2010	WBND-LD	No	28.73
2010	WBND-LP	No	28.73
2010	WBQD-LD	No	13.48
2010	WBQD-LP	No	13.48
2010	WCIU	Yes	28.73
2010	WCIU-DT	No	28.73
2010	WCWW-LD	No	28.73
2010	WCWW-LP	No	28.73
2010	WDCQ	No	28.73
2010	WDCQ-DT	No	5.27
2010	WDIV	No	28.73
2010	WDIV-DT	Yes	2.24
2010	WETA	No	5.27
2010	WETA-DT	No	2.24
2010	WETA-HD	No	28.73
2010	WEYI	No	28.73
2010	WEYI-DT	No	5.27
2010	WFXT-DT	Yes	5.27
2010	WFXT-HD	No	5.27
2010	WGBH	No	28.73
2010	WGBH-DT	Yes	1.00
2010	WGBH-HD	No	28.73

Year	Station	In sample	Weight
2010	WGBX	No	28.73
2010	WGBX-DT	Yes	1.00
2010	WGN-DT	Yes	1.00
2010	WGN-HD	No	13.48
2010	WHUT	No	5.27
2010	WHUT-DT	No	5.27
2010	WHYY-DT	No	2.24
2010	WHYY-HD	No	28.73
2010	WIPB-DT	No	5.27
2010	WIPB-HD	No	13.48
2010	WJYS	No	28.73
2010	WJYS-DT	No	28.73
2010	WKBD	No	28.73
2010	WKBD-DT	Yes	13.48
2010	WLIW	No	2.24
2010	WLIW-DT	Yes	1.00
2010	WLVT-DT	No	2.24
2010	WLVT-HD	No	2.24
2010	WMEU-CA	No	2.24
2010	WMEU-CD	No	28.73
2010	WMPT	No	5.27
2010	WMPT-DT	No	5.27
2010	WMPT-HD	No	13.48
2010	WMYD	Yes	28.73
2010	WMYD-DT	No	28.73
2010	WMYS-LD	No	28.73
2010	WMYS-LP	No	28.73
2010	WNET	No	13.48
2010	WNET-DT	Yes	1.00
2010	WNET-HD	No	5.27
2010	WNJN	Yes	2.24
2010	WNJN-DT	No	2.24
2010	WNJN-HD	No	2.24
2010	WNJT-DT	Yes	1.00
2010	WNJT-HD	No	2.24
2010	WNYE	No	13.48
2010	WNYE-DT	No	5.27
2010	WPXD	Yes	28.73
2010	WPXD-DT	No	28.73
2010	WSBE	Yes	2.24
2010	WSBE-DT	Yes	1.00

Year	Station	In sample	Weight
2010	WSBE-HD	No	28.73
2010	WTCN-CA	No	28.73
2010	WTCN-LP	No	13.48
2010	WTTV-DT	No	13.48
2010	WTTV-HD	No	28.73
2010	WTTW	No	28.73
2010	WTTW-DT	Yes	1.00
2010	WTVS	No	28.73
2010	WTVS-DT	No	5.27
2010	WWJ	No	28.73
2010	WWJ-DT	Yes	28.73
2010	WXSP-CD	No	13.48
2010	WXSP-LP	No	5.27
2010	WXYZ	No	28.73
2010	WXYZ-DT	No	5.27
2011	CBET	No	1.93
2011	CBET-DT	No	1.93
2011	CBWT	No	7.04
2011	CBWT-DT	No	35.30
2011	KBYU	No	35.30
2011	KBYU-DT	No	35.30
2011	KLRN	No	15.48
2011	KLRN-DT	Yes	1.93
2011	KMIZ-DT	No	35.30
2011	KMIZ-HD	No	35.30
2011	KOMU-DT	No	35.30
2011	KOMU-HD	Yes	35.30
2011	KSHV-DT	No	35.30
2011	KSHV-HD	No	35.30
2011	KWCM	No	35.30
2011	KWCM-DT	No	35.30
2011	KWSD	Yes	35.30
2011	KWSD-DT	No	35.30
2011	WBND-LD	No	35.30
2011	WBND-LP	No	35.30
2011	WCNY-DT	No	7.04
2011	WCNY-HD	No	35.30
2011	WCWW-LD	No	35.30
2011	WCWW-LP	No	35.30
2011	WDNI-CD	No	35.30
2011	WDNI-LP	No	35.30

Year	Station	In sample	Weight
2011	WJWJ-DT	No	15.48
2011	WJWJ-HD	No	7.04
2011	WLIW-DT	Yes	1.00
2011	WLIW-HD	No	7.04
2011	WMYS-LD	No	35.30
2011	WMYS-LP	No	35.30
2011	WTTV-DT	Yes	15.48
2011	WTTV-HD	No	35.30
2011	WUNC-DT	Yes	1.93
2011	WUNC-HD	No	7.04
2012	CBUT	Yes	1.00
2012	CBUT-DT	Yes	7.80
2012	KBYU	No	39.95
2012	KBYU-DT	No	39.95
2012	KESQ	No	39.95
2012	KESQ-DT	No	39.95
2012	KPTM-DT	No	39.95
2012	KPTM-HD	No	39.95
2012	KWCM	No	39.95
2012	KWCM-DT	No	18.65
2012	KWTV-DT	No	7.80
2012	KWTV-HD	No	39.95
2012	WBND-LD	No	39.95
2012	WBND-LP	No	39.95
2012	WCWW-LD	No	39.95
2012	WCWW-LP	No	39.95
2012	WFXT-DT	No	7.80
2012	WFXT-HD	No	7.80
2012	WFYI-DT	Yes	7.80
2012	WFYI-HD	No	39.95
2012	WTTV-DT	No	18.65
2012	WTTV-HD	No	39.95
2012	WTXF-DT	Yes	1.00
2012	WTXF-HD	No	18.65
2013	CBET	Yes	1.00
2013	CBET-DT	No	2.18
2013	CBUT	Yes	1.00
2013	CBUT-DT	No	6.77
2013	CBWT	No	6.77
2013	CBWT-DT	No	41.68
2013	KEYC-DT	No	15.75

Year	Station	In sample	Weight
2013	KEYC-HD	No	41.68
2013	KPTM-DT	No	41.68
2013	KPTM-HD	No	41.68
2013	KRWG	No	41.68
2013	KRWG-DT	Yes	2.18
2013	KTCA-DT	No	2.18
2013	KTCA-HD	No	15.75
2013	KWCM	Yes	41.68
2013	KWCM-DT	No	15.75
2013	WFMJ-DT	No	41.68
2013	WFMJ-HD	No	41.68
2013	WFXT-DT	No	6.77
2013	WFXT-HD	No	6.77
2013	WFYI-DT	Yes	2.18
2013	WFYI-HD	No	41.68
2013	WGCL-DT	No	41.68
2013	WGCL-HD	No	41.68
2013	WGTE-DT	No	6.77
2013	WGTE-HD	No	41.68
2013	WKBN-DT	No	15.75
2013	WKBN-HD	No	41.68
2013	WLEX-DT	No	15.75
2013	WLEX-HD	No	41.68
2013	WNAB-DT	No	41.68
2013	WNAB-HD	No	41.68
2013	WNPT-DT	No	6.77
2013	WNPT-HD	No	15.75
2013	WPCH-DT	No	41.68
2013	WPCH-HD	No	41.68
2013	WPXD-DT	No	41.68
2013	WPXD-HD	No	41.68
2013	WQED-DT	Yes	2.18
2013	WQED-HD	No	41.68
2013	WTTW-DT	Yes	1.00
2013	WTTW-HD	No	41.68
2013	WTXF-DT	Yes	1.00
2013	WTXF-HD	No	41.68
2013	WUMN-CA	No	41.68
2013	WUMN-LP	No	41.68
2013	WUPX-DT	No	41.68
2013	WUPX-HD	No	41.68

Year	Station	In sample	Weight
2013	WVAH-DT	No	15.75
2013	WVAH-HD	No	41.68
2013	WWJ-DT	No	41.68
2013	WWJ-HD	No	41.68
2013	WYMT-DT	No	41.68
2013	WYMT-HD	No	41.68
2013	WYTV-DT	No	6.77
2013	WYTV-HD	No	41.68
2013	WZTV-DT	No	41.68
2013	WZTV-HD	No	41.68

Before the
COPYRIGHT ROYALTY JUDGES
Washington, D.C.

	)	
In the Matter of	**)**	
	)	**CONSOLIDATED PROCEEDING**
Distribution of Cable Royalty Funds	**)**	**No. 14-CRB-0010-CD (2010-13)**
	)	

Rebuttal Testimony of
Ceril Shagrin

September 15, 2017

Amended February 12, 2018

<u>**STATEMENT OF CERIL SHAGRIN**</u>

1.   My name is Ceril Shagrin. I have been asked by counsel for the Commercial Television Claimants to provide rebuttal testimony in this proceeding regarding the viewing study presented by Dr. Jeffrey Gray on behalf of the "Program Suppliers" claimants.

A.   <u>Background and Experience</u>

2.   I am currently a consultant on audience measurement issues, having retired earlier this year from my position as Executive Vice President for Corporate Audience Measurement Innovation and Analytics at Univision Communications Inc. I worked for Univision for just over 18 years. Univision is a Spanish-language multimedia company, which owns and operates numerous broadcast, cable and digital networks, television broadcast stations, radio stations, and programming and other content production and distribution operations. At Univision, I was responsible for defining the strategic direction for all audience, programming and marketing research for Univision's television networks and station groups.

3.   Before joining Univision, I began my career at Nielsen Media Research. I ultimately served as Senior Vice President of Market Development at Nielsen, after working for nearly 27 years in all phases of Nielsen's audience measurement operations. I was actively involved in the development of Nielsen's data collection techniques, and was the primary participant in the development and rollout of the National People Meter Service. I pioneered the development of Nielsen's measurement of non-traditional media such as place-based media and out-of-home viewing. During my years at Nielsen, I was also the principal developer of the Nielsen Hispanic Service, which I managed for 10 years.

4.   I have been an active member of the Media Rating Council, where I chaired the Council's Television Committee and served as a member of the Executive Committee. MRC was formed in the 1960's to improve the validity, reliability, and effectiveness of audience

measurement by ratings services, and pursues its mission through the adoption of minimum standards and conducting audits of compliance with those standards. MRC undertakes in-depth reviews of various audience measurement services offered by Nielsen and other measurement companies, and issues accreditations to services that meet MRC's standards.

5.   I have also been an active member of the Interactive Advertising Bureau Research Committee and of the National Association of Broadcasters' Committee on Local Television Audience Measurement (COLTAM).   COLTAM addresses important issues concerning the quality of the research products and services that are available to local television stations. The Committee engages the ratings services in a constant dialogue about the methods and practices used to produce their local audience estimates, and takes actions aimed at providing the local broadcast television industry with research of the highest possible quality.

6.   I have also served during 2010-2013 as Chair of the Council on for Research Excellence, which was funded by Nielsen. I chaired CRE's Sample Quality Committee, and currently serve on CRE's Local Measurement Committee, Big Data Committee, and Data Quality Committee, among others. The mission of the CRE is to advance the knowledge and practice of methodological research on audience measurement through active collaboration between Nielsen and its clients.

7.   I testified before two Congressional Committees. In 2005, I testified before the Senate Committee on Commerce, Science, and Transportation. The hearing explored whether proposed legislation could remedy concerns that Nielsen's new Local People Meter technology produced biased audience measurements that underrepresented minority populations. My testimony stressed the importance of MRC audits to ensure that Nielsen's Local People Meter

data was based on a proper sample. Additionally, I served on the committee which monitored the performance of Local People Meters and evaluated the improvements needed.

8.　　I also testified before the House Committee on Oversight and Government Reform in 2009 regarding the reliability of an electronic audience measurement tool for radio, the Arbitron Portable People Meter. I testified about problems with the sampling frame, sample size, and other sample techniques Arbitron (the principal source for radio audience data) used in its Portable People Meter that disproportionately affected minority owned-stations and minority listeners. Again, I testified about the importance of MRC audits, and I served on the committee that monitored and evaluated the Portable People Meter measurement improvements.

B.　Dr. Gray's Study

9.　　I have reviewed the Amended and Corrected Testimony of Jeffrey S. Gray, Ph.D. submitted on April 3, 2017 ("Gray"), and the Testimony of Paul B. Lindstrom, which I understand was submitted on December 22, 2016 ("Lindstrom"). I have also reviewed the confidential Nielsen National Reference Supplements covering 2010-2013, which I am advised were produced in discovery. I have now reviewed the further corrected Testimony of Jeffrey S. Gray, Ph.D., which I understand was submitted on January 22, 2018 ("Amended Gray").

10.　　As I understand it, Dr. Gray undertook to measure the relative amount of viewing to several different groups of programs in cable households, only where the programs were received on television stations that were distant signals (i.e., out-of-market signals) in the communities of the measured households. Gray ¶¶ 30, 38. I further understand that Dr. Gray extracted a sample of the distant signal stations in each year from 2010 through 2013 and that Mr. Lindstrom was provided with lists of those sample stations and data about their programs, along with lists of counties in which each of the sample stations was "local" (i.e., not a distant

signal). Gray ¶ 30; Lindstrom p. 4. Nielsen then provided Dr. Gray with data that reported viewing in cable households, if any, for each quarter hour on each of the sample stations, separated between viewing in cable households where the station was local and viewing in cable households where the station was distant. Lindstrom pp. 4-5; Gray ¶ 26.

11.   I understand that all of the viewing data provided by Nielsen to Dr. Gray for the list of stations Dr. Gray specified[1] was collected in cable households included in Nielsen's National People Meter Sample and that in Amended Gray, Dr. Gray used weighted household counts rather than the weighted viewing data normally used by Nielsen in its standard audience reports.

12.   My testimony is not directed to whether viewing shares among distant signal programs is in general a proper method to determine relative market value of the distant signal program types. Instead, I address the questions of whether the particular viewing study presented by Dr. Gray is valid – meaning that it measures what it claims to measure – and whether it is reliable – meaning that if repeated it would produce consistent results.

C.   Analysis and Opinion

13.   It is my opinion, based on my review of the materials identified above and my understanding of the methodology used by Dr. Gray, that Dr. Gray's study does not provide a valid or reliable measure of the actual relative amounts of viewing to the identified groups of programs in distant cable households in 2010-2013.

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[1]   I understand that another CTV witness will demonstrate that of the slightly over 150 sample stations in each year, no data at all were provided for 8 stations in 2010, 5 stations in 2011, 6 stations in 2012, and 5 stations in 2013.

(a) Nielsen Viewing Data

14.   First, it is important to understand that although viewing data reported in a number of Nielsen's well-known audience measurement services are valid, reliable, and effective (and are therefore MRC-accredited), the custom analyses performed for use in Dr. Gray's study do not meet those standards. Nor are the viewing numbers used by Dr. Gray anything like the "Nielsen ratings" that are so widely used and accepted in the broadcast industry.

15.   I am familiar, through my long experience at Nielsen and Univision and in industry research associations, with the television industry's uses of audience measurement data for the sale of advertising time. Advertising sales, in either the national or local market, are based on ratings data in the relevant market. Dr. Gray's viewing numbers do not represent ratings, and cannot be converted to ratings.[2] Moreover, given that the viewing numbers he collects are limited to viewing of programs on distant signals, which by definition are outside each station's home market, the particular viewing he analyzes would not be the basis for advertising sales in the television marketplace. Typically, advertisers who buy advertising time in the local market would prefer local stations, which offer complete coverage of the market and higher ratings, and advertisers interested in national ad exposure would buy time on national networks or nationally syndicated programs. And even if Dr. Gray's numbers could be expressed as ratings and were correct, which I do not believe they are, they are expressed in

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[2]   Ratings are measures of the percentage of people within a market who have access to a program who actually watched the show. So a "2" rating in the Washington market means that 2% of all the households with television sets in the Washington DMA watched the particular program. My understanding of Dr. Gray's estimated viewing numbers is that they are based just on aggregated distant household viewing instances, as projected by Dr. Gray.

terms of household data, not the "persons" ratings data (e.g., "female age 18-49") that are typically bought and sold in the television advertising marketplace.

16. When Dr. Gray states that "Nielsen is a well-regarded and highly-used source of audience measurement information in the television industry," I believe he is referring to the MRC-accredited ratings services that Nielsen provides. But the custom analyses Nielsen performed here for Dr. Gray are not accredited. The methodology has not been audited to verify that the procedures were valid and correctly implemented, but a number of serious problems are evident from the limited material that has already been provided. For example, all Nielsen reports that are accredited are based on a representative sample, adjusted by weights to account for differences in cooperation rates, which is not the case for the data as used by Dr. Gray.

(b) Sample Problems

17. The sample is the foundation on which research is built. A representative sample is critical to valid, actionable estimates. To be useful, a sample must be drawn with the objective of representing the population that is the target of the research.

i. Meter Household Sample Problems

18. If a sample of cable television households were being designed to provide valid and reliable estimates of viewing to certain programs on distant (out of market) television signals, it would not be Nielsen's National People Meter ("NPM") Sample.

19. The NPM Sample is carefully designed and maintained to measure ratings of <u>nationally distributed programs</u> among all US television households ("TVHHs"). Designing a proper study of relative viewing to distant signal programs, which are not distributed evenly throughout the country, would require a different sample selection and different weighting in order to provide reliable audience estimates.

20.   A key difference is that distant signals are more prevalent in smaller markets than in the nation's largest markets. Exhibit A, which was prepared by CTV witness Dr. Chris Bennett, shows the relative numbers of distant signals and local stations carried in cable communities in 2010-2013, grouped by the size of the DMAs in which the cable communities are located. Exhibit B, also prepared by Dr. Bennett, shows that the cable communities with the largest number of local signals (generally the largest DMAs) generally have lower numbers of distant signals. Based on these analyses, it is clear that more distant signals were carried to cable subscribers in smaller markets than in larger markets in 2010-2013.

21.   The FCC actually did a study of out of market viewing, as part of a Report it issued in June 2016 in response to a Congressional mandate to provide information on the availability of out-of-market television stations. Exhibit D is a copy of the Report. Among the data analyses the FCC performed was an analysis of Nielsen local market reports (i.e., reports of viewing within each DMA) to find reported viewing to distant stations (i.e., stations from other DMAs). The analysis is explained in Paragraphs 32 and 58-61 of the Report. Exhibit E is a copy of Appendix C to the Report, in which the FCC lists all of the instances in which viewing from out of market signals was reported by Nielsen.[3] As the FCC notes, more distant stations were typically viewed in "smaller DMAs with fewer local, in-market signals."[4] And Exhibit C, prepared by Dr. Bennett based on Exhibit E, shows the number of DMAs and out of market

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[3]   As the FCC explains in its Report, it analyzed data only for the month of November 2015. It also explains that Nielsen's local market reports include distant signals only if they meet a 9.5 "cume" threshold (i.e., 9.5% of the market's television households watched at least one quarter-hour of any programming on the station during an average week). The FCC notes that this may underrepresent the total number of distant signals being viewed in various markets, but Appendix C reports all distant signal viewing that met Nielsen's own established thresholds for reportability.

[4]   Exhibit D at para. 60.

signals that had any reportable viewing at all (in the November 2015 local market reports), arranged in descending order of DMA size. Again, it is clear that out of market signal viewing is more prevalent in the very smallest DMAs. A sample properly designed to measure distant signal viewing would necessarily take that factor into account.

22.   The NPM sample, by contrast, is designed to measure viewing to nationally distributed programming across all US TVHHs. At one end of the spectrum, the sample contains substantially more households from the largest DMAs (such as New York, Los Angeles, and Chicago), and at the other end, far fewer households – and in some cases no NPM households at all – are recruited in the smallest DMAs. Given the higher incidence of distant signal carriage and distant signal viewing in the smaller DMAs, a study that uses the NPM sample would not be expected to measure distant signal viewing accurately, or even to pick up a significant portion of distant signal viewing. Measuring only distant signal viewing is in one way like measuring viewing of Spanish-language programming. In order to produce a sample that will provide a valid measure of either, there is a need to focus on the characteristics of the populations of interest and the distribution of the programming of interest in the sample design.

23.   Along the same lines, the NPM sample households in any DMA are not sufficient to provide valid ratings data for their local market. For measuring local market viewing, which requires more extensive coverage of station schedules as well as many programs that are not nationally distributed, Nielsen chooses a larger sample of households, for both Local People Meter markets and for Diary markets. Indeed, the FCC's Study used data from these larger-sample local market reports to find and identify distant signal viewing in 2015.

24.   The NPM sample, which was well designed for a specific and different purpose, simply can't do the job of validly measuring distant signal viewing.

AMENDED REBUTTAL TESTIMONY OF CERIL SHAGRIN

25.   Even if using the NPM Sample were appropriate for measuring distant signal viewing, Dr. Gray used viewing data only for a sample of the distant signals. As with Nielsen's selection of a sample of households, the validity and reliability of data reported by Dr. Gray for a sample of stations would depend on whether the sample was properly drawn, whether it proportionately represents the populations of interest (in this case all distant signal programming), and if necessary whether (as discussed in the next section) the reported data are weighted properly to account for any over- or under-representation. I understand that CTV witness Dr. Bennett will present an analysis of whether Dr. Gray's station sample was properly selected and weighted.

(c) Weighting Problems

26.   Weighting is absolutely critical to the validity and reliability of the NTI reports based on the National People Meter Sample households. Nielsen applies these weights to counteract sampling error, by comparing the in-tab households (i.e., those providing usable information that can be included in the particular viewing report) with the Universe Estimate and weighting the in-tab households to make them match, and therefore proportionately represent, the universe being measured.

27.   Weighting factors applied by Nielsen to its NPM household data may number 20 or more per household, and include market/sample size, cable status, age, race, education, household size, languages spoken, presence of children, and more. Nielsen's weighting of each NPM Sample household may be changed on a daily basis, depending on whether the households being measured each day match the characteristics of the population they are being used to

represent. Without this complex and careful weighting, the reported viewing data for the sample cannot be considered as accurately representing the viewing of the sampled population.

28. Dr. Gray's aggregation in his initial testimony of raw household viewing observations, without including their Nielsen weights, would not produce a valid measure of national viewing, even if the NPM Sample adequately represented the relevant universe of distant signal viewing. I understand that Dr. Gray weighted the household viewing data based on the chances of selection of each station in his sample, but that does not address or cure the problem of ignoring the Nielsen household weights. I further understand that Amended Gray now uses Nielsen-weighted household counts (though not the Nielsen-weighted measures of the actual amounts of viewing reported in those households). While it is proper not to ignore the Nielsen household weights, this change still would not produce a valid measure of relative distant signal viewing. Nielsen determines the weight for each household each day by carefully comparing the characteristics of the household with the characteristics it is intended to represent in the Universe Estimates (i.e., the population being measured – all US TV Households). In order for the household weights to be proper in Amended Gray, it would be necessary to make a similar but separate comparison of each household's characteristics to those of the relevant universe – all cable households that receive distant signals. Having failed to do so, Dr. Gray still does not present a valid measure of distant signal viewing.

D. **Conclusion**

29. Based on the fundamental methodological flaws in his study, and based on my experience in audience measurement, it is my opinion that the analysis conducted by Dr. Gray

cannot be relied upon as a valid or reliable measure of actual distant signal viewing in 2010-2013.

EXHIBIT A

Average offering of distant and local signals grouped by DMA ranking, 2010-2013
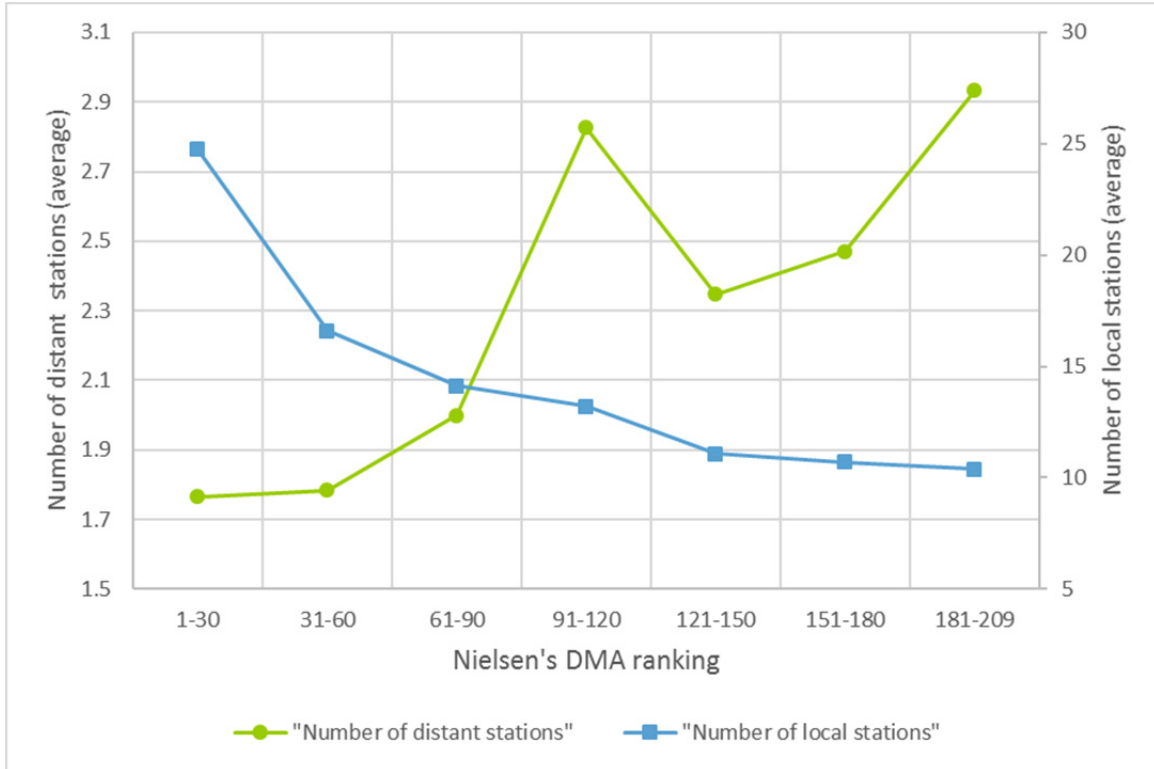
EXHIBIT B

Relationship between the number of distant signals and local signals offered by a cable system in a community during 2010-2013
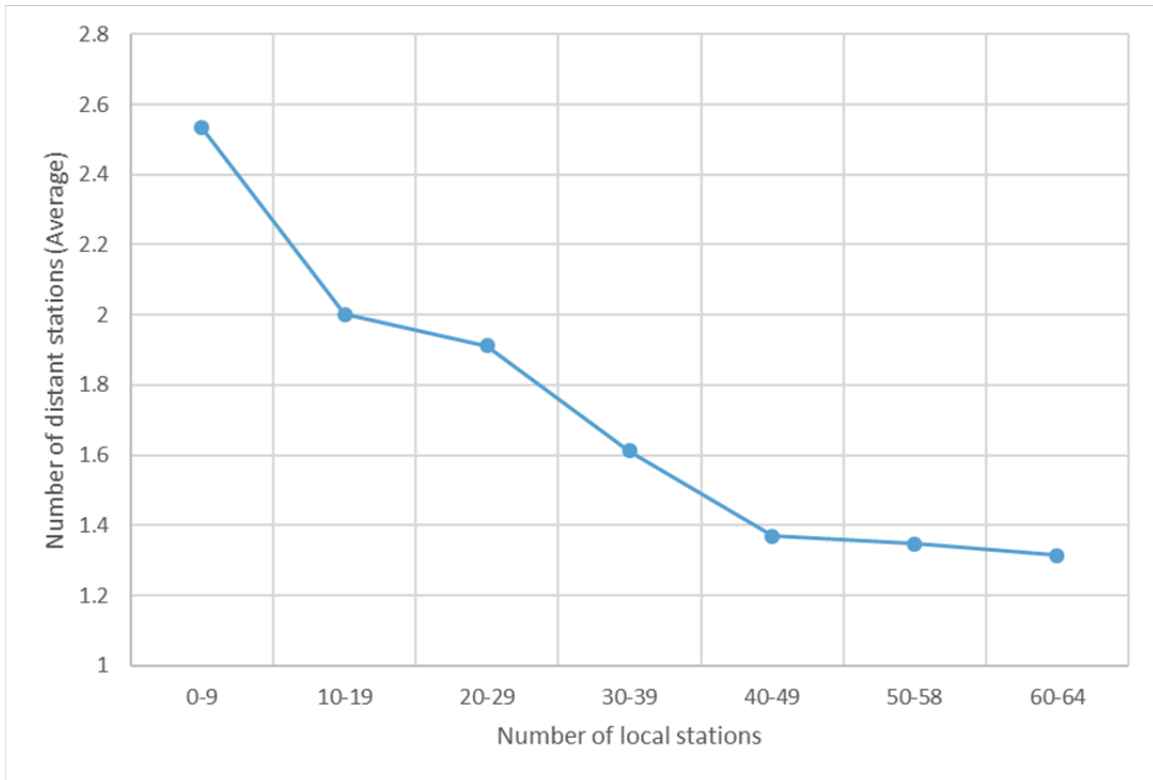
EXHIBIT C

Out-of-market signals viewed and DMA, by DMA rank 2015

Chart: "Out-of-market signals viewed and DMA, by DMA rank 2015." X-axis: DMA Rank (1-30, 31-60, 61-90, 91-120, 121-150, 151-180, 181-210). Y-axis: Count (0 to 60). Blue bars: Count of DMAs with viewed out-of-market signals. Green bars: Count of viewed out-of-market signals.
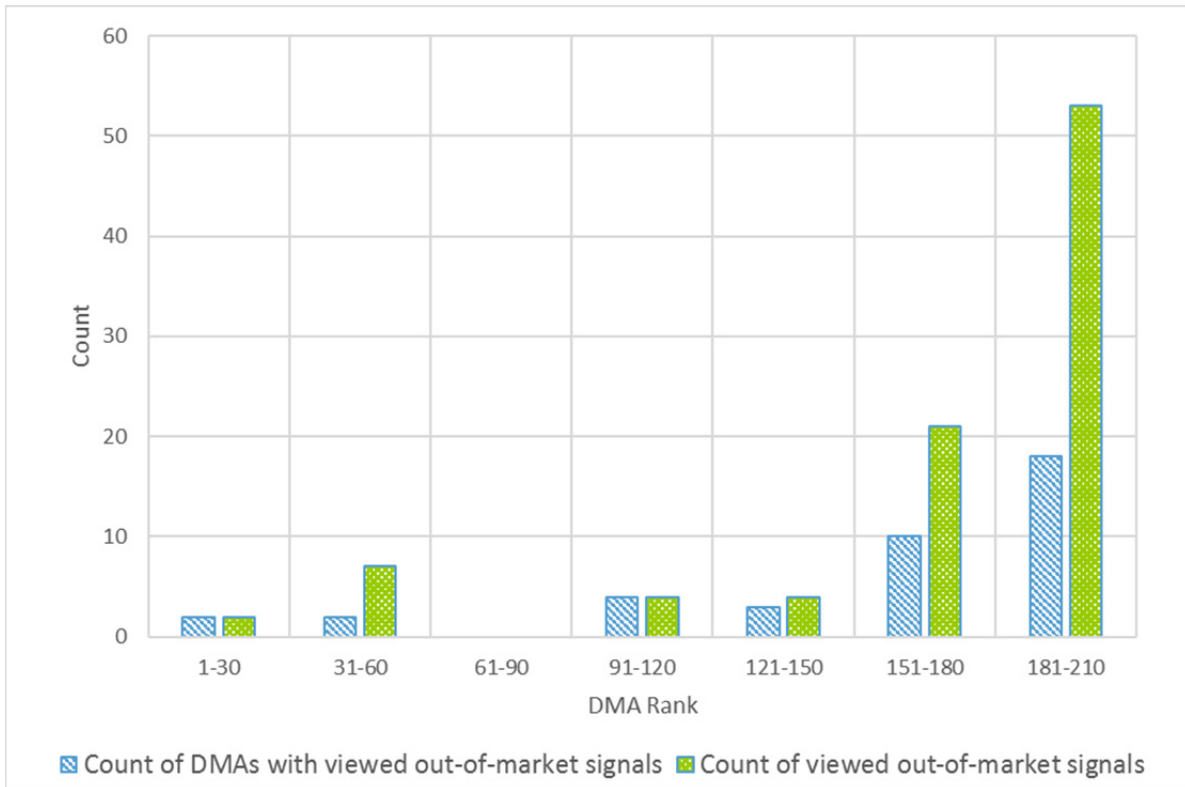
EXHIBIT D

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	**)**	
	)	
Designated Market Areas:	**)**	MB Docket No. 15-43
Report to Congress	**)**	
Pursuant to Section 109 of the	**)**	
STELA Reauthorization Act of 2014	**)**	
	)	
	)	

REPORT

Adopted: June 3, 2016 **Released: June 3, 2016**

By the Chief, Media Bureau:

TABLE OF CONTENTS

I.   INTRODUCTION

        1.   The STELA Reauthorization Act of 2014 (STELAR) amends the Communications Act of 1934, as amended, (Communications Act) and Title 17 of the United States Code to extend expiring provisions relating to the retransmission of signals of television broadcast stations.[1] The STELAR also

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[1] STELA Reauthorization Act of 2014, Pub. L. No. 113-200, § 109, 128 Stat. 2059, 2065 (2014) (STELAR).

amends several Federal Communications Commission (Commission) regulations relating to the carriage of television broadcast signals by cable systems and satellite video providers.[2]

      2.   In addition, Section 109 of the STELAR requires the Commission to submit a report on designated market areas (DMAs)[3] and considerations for fostering increased localism to the appropriate congressional committees not later than 18 months after the date of enactment (i.e., June 4, 2016).[4] Specifically, Section 109(a)(1) states that the report should contain an analysis of the following:

> (A) the extent to which consumers in each local market have access to broadcast programming from television broadcast stations located outside their local market, including through carriage by cable operators and satellite carriers of signals that are significantly viewed (within the meaning of section 340 of the Communications Act of 1934 (47 U.S.C. 340)); and

> (B) whether there are technologically and economically feasible alternatives to the use of designated market areas to define markets that would provide consumers with more programming options and the potential impact such alternatives could have on localism and on broadcast television locally, regionally, and nationally;[5]

      3.   Section 109(a)(2) requires further that the report contain "recommendations on how to foster increased localism in counties served by out-of-State designated market areas."[6] In making such recommendations, Section 109(b) of the STELAR instructs that the Commission consider the following factors:

> (1) the impact that designated market areas that cross State lines have on access to local programming;

> (2) the impact that designated market areas have on local programming in rural areas; and

> (3) the state of local programming in States served exclusively by out-of-State designated market areas.[7]

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[2] Statement by the Press Secretary on H.J. Res. 129, H.R. 4067, H.R. 5441, H.R. 5728, Dec. 4, 2014, 2014 WL 6845401.

[3] A DMA is a geographic area defined by The Nielsen Company as a group of counties that make up a particular television market. These counties comprise the major viewing audience for the television stations located in their particular metropolitan area. For the most part, the metropolitan areas correspond to the standard metropolitan statistical areas defined by the Federal Government Office of Management and Budget. The geographic areas do not overlap, and most counties in the United States belong to only one DMA (in rare instances a county is divided by Nielsen and assigned to different DMAs). DMAs are used in the evaluation of audience data as well as in the planning and buying of television advertising. In addition, the DMA is used to define local markets for broadcast station carriage rights under must carry and retransmission consent. DMAs also have a limited role in determining broadcast television ownership limits as part of the Commission's media ownership rules. In the satellite context, the statute requires that DMAs be used to define local markets. *See, e.g.,* 47 U.S.C § 338 (signal carriage rights) and 17 U.S.C. § 122 (copyright).

[4] The date of enactment was December 4, 2014. Thus, the deadline for the Section 109 Report under the STELAR is June 4, 2016.

[5] STELAR, § 109(a)(1)(A), (B), 128 Stat. 2065; *see* Report from the Senate Committee on Commerce, Science, and Transportation accompanying S. 2799 (the Satellite Television Access and Viewer Rights Act (STAVRA)), 113th Cong., S. Rep. No. 113-322, at 15 (2014) (*Senate Commerce Committee Report*).

[6] STELAR, § 109(a)(2), 128 Stat. 2065; *see Senate Commerce Committee Report* at 15.

[7] STELAR, § 109(b)(1)-(3), 128 Stat. 2065; *see Senate Commerce Committee Report* at 15.

4.   The Commission's Media Bureau (Bureau) issued a public notice (*STELAR Report PN*) seeking data, information, and comment for use in preparation of the required report.[8] Specifically, the Commission sought comment on the appropriate methodologies and data sources, as well as the submission of data and information, to analyze the extent to which consumers have access to programming from broadcast stations located outside their local markets.[9] The *STELAR Report PN* sought comment on technologically and economically feasible alternatives to DMAs that would provide more programming options and the potential impact of such alternatives on localism and on broadcast television locally, regionally, and nationally.[10] Further, the *STELAR Report PN* sought recommendations on how to foster localism in counties served by out-of-State DMAs and the impact of such recommendations as required under Section 109(b).[11] In response to the *STELAR Report PN*, the Bureau received comments from broadcasters, cable and satellite video providers, and a county political party, as well as from individual consumers. Commenters generally support retaining the current DMA-based market determination system but disagree on the method for ensuring access to in-state programming for all counties.[12]

5.   In this Report, the Media Bureau analyzes the issues raised in Section 109 of the STELAR concerning access to out-of-market stations and methods to foster increased localism in counties served by out-of-state designated market areas. Specifically, the Report: (1) examines the extent to which consumers in local markets have access to broadcast programming from television stations located outside of their local market; (2) assesses whether there are any technologically or economically feasible alternatives to the use of DMAs to define markets that would provide consumers with greater programming options and the potential impact of alternatives on localism and on broadcast television locally, regionally, and nationally; and (3) includes a discussion of recommendations that might foster increased localism in counties served by out-of-state DMAs. In order to provide an appropriate foundation for the discussion of DMAs and access to local broadcast stations, we first describe below the most current statutory and regulatory provisions governing broadcast television and carriage of broadcast television stations.

II.   BACKGROUND

6.   Under the Communications Act and the Commission's rules, the Commission uses DMAs, as determined by the Nielsen Company (Nielsen), to define local markets with respect to the carriage of broadcast signals by cable and satellite operators.[13] Nielsen divides the United States into 210

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[8] *Media Bureau Seeks Comment for Report Required by the Stela Reauthorization Act Of 2014*, MB Docket No. 15-43, Public Notice, 30 FCC Rcd 1904 (MB 2015) (*STELAR Report PN*).

[9] *STELAR Report PN*, 30 FCC Rcd at 1905.

[10] *Id.*

[11] *Id.*

[12] *See infra* paras. 89-94.

[13] *See* 47 U.S.C. § 534(h)(1)(C); 47 CFR § 76.55(e)(2) (defining a television broadcast station's local market for purposes of cable carriage). *See* 47 U.S.C. § 338(k)(4) (using definition in 17 U.S.C. §§ 122(j)(2)); 47 CFR § 76.66(e) (defining a television broadcast station's local market for purposes of satellite carriage). The Communications Act originally defined local markets for cable carriage using the Arbitron areas of dominant influence (ADI) methodology. Due to Arbitron discontinuing its television research operation, Section 614 of the Communications Act was amended by Section 301 of the Telecommunications Act of 1996 to provide that, for purposes of applying the cable mandatory carriage provisions, "a broadcast station's market shall be determined by the Commission by regulation or order using, where available, commercial publications which delineate television markets based on viewing patterns." 47 U.S.C. § 534(h)(1)(C)(i); *see also Definition of Markets for Purposes of the Cable Television Mandatory Television Broadcast Signal Carriage Rules*, CS Docket No. 95-178, Report and Order

DMAs. DMAs describe each television market in terms of a group of counties and are defined by Nielsen based on measured viewing patterns.[14] The counties included in a DMA generally are clustered geographically around the major metropolitan area or areas in that DMA, where the majority of the market's television stations usually are located. DMAs are in part primarily designed to facilitate commercial purposes — such as program acquisition, the sale of advertising, and network compensation — and thus primarily represent market areas where broadcasters acquire programming and sell advertising.[15] Because DMAs are based on viewing patterns as measured by Nielsen irrespective of state boundaries, a large number of DMAs cross state lines and include counties from multiple states.[16]

7.   Multichannel video programming distributors (MVPDs) generally carry the television stations assigned by Nielsen to their local markets.[17] As a result, some residents of certain counties located within multiple-state DMAs may not always receive the programming of broadcast television stations located in the state in which they live, either by means of over the air reception or MVPD service. To the extent that such county residents cannot receive broadcast station signals that originate within their state, some have referred to such counties informally as "orphan counties."

8.   In part because of the concern that consumers residing in such counties may not have access to in-state broadcast television programming, Congress directed the Commission in 2010, as part of the Satellite Television Extension and Localism Act (STELA), to analyze how many consumers have access to in-state local broadcast television stations.[18] At that time, Congress also directed the Commission to determine if alternatives to the use of DMAs to define local markets existed that would provide more consumers with in-state broadcast programming.[19] In response to Congress's direction in STELA, on August 26, 2011, the Bureau issued the *In-State Programming Report*, which found that the overwhelming majority of consumers have access to in-state programming and that significant disadvantages existed for alternatives to the DMA market determination system.[20]

(Continued from previous page)

and Further Notice of Proposed Rulemaking, 11 FCC Rcd 6201, 6202, para. 1 (1996) (*Market Definition Order*) (defining local markets using Nielsen DMAs after Arbitron ceased publication of television data). The Commission concluded that Nielsen's DMA system was the appropriate commercial publication to replace Arbitron. *Market Definition Order*, 11 FCC Rcd at 6202, para. 1. Congress subsequently used DMAs to define local markets in the satellite carriage context. 47 U.S.C. § 338(k)(4); 17 U.S.C. § 122(j)(2).

[14] Nielsen delineates television markets by assigning each U.S. county (except for certain counties in Alaska) to one market based on measured viewing patterns both off-air and by MVPD distribution. *See Retransmission Consent and Exclusivity Rules: Report to Congress Pursuant to Section 208 of the Satellite Home Viewer Extension and Reauthorization Act of 2004*, 2005 WL 2206070, at para. 53 n.177 (Sept. 8, 2005) (*SHVERA Report*); *see also* Nielsen Media Research, Glossary of Media Terms, at http://www.nielsenmedia.com/glossary/.

[15] *Market Definition Order*, 11 FCC Rcd at 6209, 6220, paras. 21, 39.

[16] *Broadcast Localism*, MB Docket No. 04-233, Report on Broadcast Localism and Notice of Proposed Rulemaking, 23 FCC Rcd 1324, 1345-46, para. 49 (2008).

[17] By statute, cable operators are required to carry the signals of all qualified television stations in their local market. See 47 U.S.C. § 534. DBS providers are required to carry the signals of all qualified television stations in a local market if they choose to carry the signal of at least one local television station in that market. See 47 U.S.C. § 338; 17 U.S.C. § 122.

[18] *In-State Broadcast Programming: Report to Congress Pursuant to Section 304 of the Satellite Television Extension and Localism Act of 2010*, MB Docket No. 10-238, Report, 26 FCC Rcd 11919, 11920, para. 2 (MB 2011) (*In-State Programming Report*).

[19] *Id.*

[20] *Id.* at 11929-30, paras. 17-18.

9. Now, through Section 109 of the STELAR, Congress has directed the Commission to analyze the issue of access to broadcast television stations further, specifically through the lens of whether consumers have access to out-of-market stations, regardless of whether those stations are located in the same state or a different state as the viewer.[21] In addition, Section 109 directs the Commission to examine further whether there are any technologically and economically feasible alternatives to the Nielsen DMA market system, and to also discuss any recommendations that might foster increased localism in counties that are included in out-of-state DMAs.

10. Our assessment of the issues regarding the ability of consumers to receive out-of-market broadcast stations begins with an updated presentation of the regulations and statutes that govern broadcast television and the carriage of broadcast television stations by MVPDs. These statutory and regulatory provisions help to establish why certain stations are available only in certain locations. Also, some commenters in this proceeding propose potential modifications to various aspects of these provisions. We thus set forth these provisions to facilitate a comprehensive examination of the matters at hand. Specifically, we briefly describe below the copyright, retransmission consent, and mandatory carriage statutory provisions, as well as Commission rules regarding cable carriage of broadcast television station signals and how cable carriage differs in several respects from Direct Broadcast Satellite (DBS) carriage. We note the changes to the Commission's rules that have been implemented pursuant to the STELAR, including the recent extension of the Commission's market modification rules to allow the Commission to modify markets for purposes of satellite carriage. We also describe the Commission's pending proceeding regarding the rules governing program exclusivity.

11. *Localism in Broadcast Television.* Localism has been a cornerstone of the Commission's broadcast regulation for decades.[22] The concept derives from Title III of the Communications Act, which generally instructs the Commission to regulate broadcasting as the public interest, convenience, and necessity dictate. Section 307(b) of the Communications Act explicitly requires the Commission to "make such distribution of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a fair, efficient, and equitable distribution of radio service to each of the same."[23] In carrying out the mandate of Section 307(b), the Commission has long recognized that "every community of appreciable size has a presumptive need for its own transmission service."[24] The Supreme Court has stated that "[f]airness to communities [in distributing radio service] is furthered by a recognition of local needs for a community radio mouthpiece."[25] Broadcasters thus function as temporary trustees of the public's airwaves and must use the medium to serve the public interest.[26] The Commission has consistently interpreted this responsibility to mean that licensees must air programming that is responsive to the needs and interests of their communities of license.[27]

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[21] In contrast to Section 304 of STELA, which directed the Commission to analyze consumer access to in-state and out-of-state local broadcast television station signals, Section 109(a)(1)(A) of the STELAR seeks an analysis of consumer access to out-of-market stations. STELAR, § 109(a)(1)(A), 128 Stat. 2065.

[22] *See, e.g.*, *Deregulation of Radio*, 84 FCC 2d 968, 994, para. 58 (1981) ("The concept of localism was part and parcel of broadcast regulation virtually from its inception.").

[23] 47 U.S.C. § 307(b).

[24] *Pacific Broadcasting of Missouri LLC*, 18 FCC Rcd 2291, 2293 (2003) (quoting *Public Service Broadcasting of West Jordan, Inc.*, 97 F.C.C. 2d 960, 962 (Rev. Bd. 1984)).

[25] *FCC v. Allentown Broadcasting Corp.*, 349 U.S. 358, 362 (1955).

[26] *See, e.g.*, *Broadcast Localism*, MB Docket No. 04-233, Notice of Inquiry, 19 FCC Rcd 12425, 12425, para. 1 (2004) (*Broadcast Localism NOI*).

[27] *See id.* at 12425, para. 1. A broadcast station's community of license is typically a much smaller geographic area than a DMA.

12.	Once awarded a license, a broadcast television station must place a specified signal contour over its community of license to ensure that local residents receive service.[28] A full power television station must maintain its main studio in or near its community of license to facilitate interaction between the station and the members of the local community served by the station.[29] For similar reasons, a station "must equip the main studio with production and transmission facilities that meet the applicable standards, maintain continuous program transmission capability, and maintain a meaningful management and staff presence."[30] A station must also post to a central, FCC-hosted online database certain public file documents,[31] including "a list of programs that have provided the station's most significant treatment of community issues during the preceding three month period."[32] Lastly, as a general matter, a broadcast station seeking Commission authority to renew, assign, or transfer its license must give public notice to its community to ensure that members of the community have an opportunity to file a petition to deny if the members object to the station's application for renewal or assignment or transfer.[33] Taken together, these rules, policies, and procedures reflect the Commission's goal of establishing and maintaining a system of local broadcasting that is responsive to the unique interests and needs of individual communities.[34]

13.	*Cable Carriage of Local Broadcast Stations.* Prior to 1992, Congress did not require cable operators to seek the permission of a broadcaster before carrying its signal or to compensate the broadcaster for the value of its signal.[35] Congress established in the 1992 Cable Act a regime for carriage of broadcast television stations on cable systems.[36] The 1992 Cable Act permitted broadcasters to seek

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[28] *See* 47 CFR § 73.685(a).

[29] *See id.* § 73.1125.

[30] *Amendment of Section 73.1125 and 73.1130 of the Commission's Rules, the Main Studio and Program Origination Rules for Radio and Television Broadcast Stations*, Memorandum Opinion and Order, 3 F.C.C.R. 5024, at para. 24 (1988), *erratum issued*, 3 FCC Rcd 5717 (1988) (correcting language in n.29).

[31] *Standardized and Enhanced Disclosure Requirements for Television Broadcast Licensee Public Interest Obligations*, Second Report and Order, 27 FCC Rcd 4535 (2012); 47 CFR § 73.3526(b)(2). *See also Expansion of Online Public File Obligations to Cable and Satellite TV Operators and Broadcast and Satellite Radio Licensees*, MB Docket No. 14-127, Report and Order, 31 FCC Rcd 526 (2016).

[32] 47 CFR § 73.3526(e)(11)(i) (commercial TV issues/programs list). These lists must be retained until final action has been taken on the station's next renewal application. *Id.* The purpose of this requirement is to provide both the public and the Commission with information needed to monitor a licensee's performance in meeting its public interest obligation of providing programming that is responsive to its community. *See Standardized and Enhanced Disclosure Requirements for Television Broadcast Licensee Public Interest Obligations*, 15 FCC Rcd 19816, 19821, para. 13 (2000).

[33] *See* 47 CFR § 73.3580.

[34] *See Broadcast Localism NOI*, 19 FCC Rcd at 12427, para. 4. Localism also forms one of the Commission's policy goals for its media ownership rules. *See 2014 Quadrennial Regulatory Review – Review of the Commission's Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996*, MB Docket No. 14-50 et al., Further Notice of Proposed Rulemaking and Report and Order, 29 FCC Rcd 4371, 4377, para. 14 (2014).

[35] Congress found that this created a "distortion in the video marketplace which threatens the future of over the air broadcasting." S. Rep. No. 92, 102d Cong., 1st Sess. 1 (1991), at 35 (Senate Report).

[36] Cable Television Consumer Protection and Competition Act of 1992, Pub. L. No. 102-385, 106 Stat. 1460 (1992) (1992 Cable Act or 1992 Act); H. Rep. No. 628, 102d Cong., 2d Sess. (1992) (House Report); Senate Report. *See also* 47 U.S.C. § 534 (carriage of commercial television stations); 47 U.S.C. § 535 (carriage of noncommercial television stations); 47 U.S.C. § 325 (retransmission consent).

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compensation from cable operators and other MVPDs for carriage of their signals through a system commonly referred to as retransmission consent, as a way of giving broadcasters control over the use of their station signals.[37] The 1992 Cable Act also established mandatory carriage rights for local broadcast television stations commonly referred to as must-carry requirements. Congress recognized the importance of local television broadcast stations as providers of local news and public affairs programming in adopting the mandatory carriage provisions.[38] Congress observed that broadcast television stations rely on advertising dollars to provide free over the air local service and that competition from cable television in attracting advertisers posed a threat to the economic viability of television broadcast stations. By mandating cable carriage of broadcast stations, Congress sought to ensure the continued economic viability of free local broadcast television.[39]

14.   The process whereby cable operators carry local broadcast stations in local television markets is governed by the Communications Act and the Commission's rules.[40] Commercial television stations may elect cable carriage under either must-carry or retransmission consent requirements within their local television markets, based on Nielsen DMAs.[41] Under the must-carry regime, a local commercial broadcast television station generally can require a cable system to carry its signal if it serves the same market as the cable system, delivers a good quality signal to the cable system's headend, and indemnifies the cable system against copyright infringement, among other statutory requirements.[42] Under the retransmission consent regime, the cable operator and broadcaster negotiate the terms of a retransmission consent agreement, which may include monetary or other compensation for carriage of the broadcast signal. Both sides are required to negotiate in good faith.[43] Cable operators also may negotiate for retransmission consent with any other broadcast television station they seek to carry regardless of the station's television market.[44] In this manner, cable operators may carry the signals of television stations

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[37] Congress noted that some broadcasters might find that carriage itself was sufficient compensation for the use of their signal while other broadcasters might seek monetary compensation and still others might negotiate for in-kind consideration such as joint marketing efforts, the opportunity to provide news inserts on cable channels, or the right to program an additional channel on a cable system. Senate Report at 36. Congress emphasized that it intended "to establish a marketplace for the disposition of the rights to retransmit broadcast signals" but did not intend "to dictate the outcome of the ensuing marketplace negotiations." *Id.* On September 2, 2015, the Commission issued a Notice of Proposed Rulemaking implementing Section 103(c) of the STELAR. This rulemaking seeks comment on whether and how to update the totality of the circumstances test for good faith negotiation of retransmission consent and whether certain practices should be considered evidence of bad faith under the totality of the circumstances test, or, alternatively, *per se* violations of the requirement to negotiate in good faith. *See Implementation of Section 103(c) of the STELA Reauthorization Act of 2014*, *Totality of the Circumstances Test*, Notice of Proposed Rulemaking, 30 FCC Rcd 10327, 10332, 10344-45, paras. 6, 20 (2015).

[38] House Committee on Energy and Commerce, H.R. Conf. Rep. No. 102-862, 102d Cong., 2d Sess. (1992), reprinted at 138 Cong. Rec. H8308, at 2 (Sept. 14, 1992).

[39] *Id.* at 3.

[40] Federal law and Commission regulations require cable operators that are subject to rate regulation to provide subscribers with a basic service tier and to carry local broadcast stations on that tier. 47 U.S.C. § 543(b)(7); *see also* 47 CFR § 76.901.

[41] *See* 47 CFR § 76.64.

[42] *See id.* §§ 76.55(c)(2)-(3), 76.56(b)(5).

[43] *Id.* § 76.65.

[44] 47 U.S.C. § 325; *see also* 47 CFR § 76.64 (retransmission consent). However, such carriage arrangements may be, and often are, limited by other contractual restrictions, such as network affiliation agreements. *See supra* paras. 24, 109.

that originate in a market other than the market in which the cable system operates. Such stations are typically referred to in this Report as either "distant signals" or "out-of-market stations."

15. Qualified local noncommercial educational (NCE) broadcast television stations have must-carry rights under the 1992 Act, but do not have statutory retransmission consent rights.[45] Among other requirements, the NCE broadcast television station must serve the same market as the cable system on which it seeks carriage, deliver a good quality signal, and not air duplicative programming to be deemed a "qualified" NCE station.[46] Under specifically enumerated criteria, qualified low power broadcast television (LPTV) stations, including Class A stations, also may be eligible for mandatory carriage on cable systems.[47]

16. Commission rules, pursuant to Section 614(h)(1)(C) of the 1992 Cable Act, also permit a modification of the local television market to include additional communities or to exclude certain communities on request from a broadcast station or a cable system.[48] This process is known as market modification and can be used to avoid rigid adherence to Nielsen's DMA assignments by adding or removing communities from a DMA-based local television market for the purposes of broadcast station carriage rights.[49] In determining whether to grant a request to modify a local market, pursuant to the current statute as amended by the STELAR, the Commission must give particular attention to localism through its consideration of several statutory factors, including (1) whether the station, or other stations located in the same area, (a) have been historically carried on the cable system or systems within such community; and (b) have been historically carried on the satellite carrier or carriers serving such community; (2) whether the television station provides coverage or other local service to such community; (3) whether modifying the local market of the television station would promote consumers' access to television broadcast station signals that originate in their state of residence; (4) whether any

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[45] 47 U.S.C. § 325(b)(2)(A).

[46] Pursuant to the Commission's rules, a qualified NCE station is one that is: (1) licensed to a community whose reference point, as defined in § 76.53, is within 80.45Km (or 50 miles) of the principal headend (as defined in § 76.5) of the cable system; and (2) whose Grade B service contour encompasses the principal headend (as defined in § 76.5) of the cable system. Further, a cable operator is not required to carry the signal of a qualified local NCE station if the station's signal would be considered a distant signal for copyright purposes unless the station agrees to indemnify the cable operator for any increased copyright liability resulting from carriage of its station signal. 47 CFR § 76.55(b). We note that this rule has not been amended since the digital transition. However, following the digital transition, a station's service area is no longer defined by reference to its Grade B contour. Rather, a digital station's service area is defined as the area within its noise-limited contour where its signal strength is predicted to exceed the noise-limited service level. *See id.* § 73.622(e); *see also Report To Congress: The Satellite Home Viewer Extension and Reauthorization Act of 2004 Study of Digital Television Field Strength Standards and Testing Procedures*, ET Docket No. 05-182, 20 FCC Rcd 19504, 19507, 19554, paras. 3, 111 (2005); *Implementation of the Satellite Home Viewer Extension and Reauthorization Act of 2004, Implementation of Section 340 of the Communications Act*, MB Docket No. 05-49, Report and Order, 20 FCC Rcd 17278, 17292, para. 31 (2005).

[47] 47 CFR §§ 76.55(d), 76.56(b)(4). LPTV stations may be entitled to mandatory cable carriage only in limited circumstances. Both the Communications Act and the Commission's rules mandate that only a minimum number of qualified low power stations must be carried by cable systems, *see* 47 U.S.C. § 534(c)(1); 47 CFR § 76.56(b)(3), and, in order to qualify, such stations must meet several criteria. *See* 47 U.S.C. § 534(h)(2)(A) – (F); 47 CFR § 76.55(d)(1) – (6). Class A stations have the same limited must carry rights as LPTV stations; in other words, they are "low power stations" for mandatory carriage purposes. *See Establishment of a Class A Television Service*, MM Docket No. 00-10, Memorandum Opinion and Order on Reconsideration, 16 FCC Rcd 8244, 8259-6, paras. 40, 42. LPTV stations are not entitled to mandatory satellite carriage. *See* 47 U.S.C. § 338(a)(3).

[48] 47 CFR § 76.59; *see also* 47 U.S.C. § 534(h)(1)(C); STELAR § 102, 128 Stat. at 2060-62 (extending market modification provisions to satellite MVPDs).

[49] 47 CFR § 76.59.

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other television station that is eligible to be carried by a satellite carrier in such community in fulfillment of the requirements of this section provides news coverage of issues of concern to such community or provides carriage or coverage of sporting and other events of interest to the community; and (5) evidence of viewing patterns in households that subscribe and do not subscribe to the services offered by multichannel video programming distributors within the areas served by such multichannel video programming distributors in such community.[50] In the STELAR, Congress added the additional factor (numbered as factor 3 above), which requires consideration of access to television stations that are located in the same state as the community considered for modification.[51] On September 2, 2015, as part of its implementation of Section 102 of the STELAR, the Commission stated that the new factor favors any market modification that would promote consumers' access to an in-state station.[52] In addition, Section 102 extended the market modification provisions to apply to satellite MVPDs, as discussed further below.[53]

17.   Certain stations are considered "significantly viewed" under the Commission's rules based on over the air viewing. For broadcast signal carriage purposes, these stations are treated as local stations.[54] In addition to stations historically considered significantly viewed in a community, the Commission grants significantly viewed status to commercial stations based on petitions from broadcasters, cable operators, or DBS operators that show that a station satisfies viewing criteria on a community-wide or county-wide basis.[55] These petitions must follow statistical requirements in Commission rules that were later codified in the U.S. Copyright Act with respect to satellite carriers.[56] Carriage of out-of-market significantly viewed signals also requires retransmission consent.[57]

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[50] 47 U.S.C. § 534(h)(1)(C)(ii)(I)-(V). The Commission must also consider other relevant information to develop a result that is designed to "better effectuate the purposes" of the law. *See Definition of Markets for Purposes of the Cable Television Broadcast Signal Carriage Rules*, CS Docket No. 95-178, Order on Reconsideration and Second Report and Order, 14 FCC Rcd 8366, 8389, para. 53 (1999) (*Cable Market Modification Second Report and Order*).

[51] STELAR, § 102(b)(1)(C), 128 Stat. 2061. 47 U.S.C. § 534(h)(1)(C)(ii)(III).

[52] *Amendment to the Commission's Rules Concerning Market Modification*, MB Docket No. 15-71, Report and Order, 30 FCC Rcd 10406, 10409, para. 4 (2016) (*Satellite Market Modification Order*).

[53] *See* STELAR § 102, 128 Stat. at 2060-62; 47 U.S.C. § 338(*l*)(2)(B)(i)-(v).

[54] *See SHVERA Report* at paras. 15-16; *see also Implementation of Section 203 of the Satellite Television Extension and Localism Act of 2010*, MB Docket No. 10-148, Report and Order and Order on Reconsideration, 25 FCC Rcd 16383, 16389-90, paras. 7-8 (2010) (*STELA Significantly Viewed Report and Order*).

[55] 47 CFR § 76.54(b), (d); 47 CFR § 76.5(i)(1)-(2). All stations that have been declared significantly viewed are included in the publicly available significantly viewed list. The determination of whether or not a station is considered significantly viewed in a community depends on several statutory factors, and is not dependent upon whether the station is in the same market or state as the county in which it is considered significantly viewed. The current significantly viewed list is available on the Media Bureau's website at http://www.fcc.gov/mb/. The vast majority of stations identified on the significantly viewed list are already considered local in their markets, as the counties in which they are considered significantly viewed are contained in the station's DMA.

[56] *See* STELA § 103.

[57] 47 U.S.C. § 340(d)(2). The STELAR contains a provision that prohibits a television broadcast station from limiting the ability of an MVPD to carry into its local market television signals that are deemed "significantly viewed" or that otherwise are permitted to be carried by the MVPD unless such stations are directly or indirectly under common *de jure* control permitted by the Commission. STELAR, § 103(b), 128 Stat. 2062; *Implementation of Sections 101, 103 and 105 of the STELA Reauthorization Act Of 2014*, MB Docket 15-37, Order, 30 FCC Rcd 2380, 2382, para. 5 (2015).

18.   Copyright law also forms a significant portion of the regulatory framework governing broadcast signal carriage. The Copyright Act grants cable systems a statutory or "compulsory" license for the retransmission of all local broadcast signals and distant signals that the Commission has permitted them to carry.[58] Unlicensed retransmission of the copyrighted material in a broadcast signal constitutes copyright infringement pursuant to amendments of the Copyright Act.[59] The compulsory licensing regime established by the 1976 amendments to the Copyright Act also took into consideration the Commission's rules that: (1) defined the term "local broadcast station;" (2) limited the number of distant signals that a cable operator could import (the distant signal rule);[60] (3) permitted a local broadcaster to require a cable operator to delete duplicative programming for which the station had obtained exclusive rights (the network non-duplication and syndicated exclusivity rules); and (4) required the carriage of certain signals.[61]

19.   *Satellite Carriage of Local Broadcast Stations*. Congress enacted the first satellite compulsory copyright law in 1988 as the Satellite Home Viewer Act (SHVA),[62] which granted direct-to-home (DTH) satellite providers a compulsory copyright license to retransmit television signals of distant network stations[63] to "unserved households" and superstations (non-network stations) to any household.[64]

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[58] 17 U.S.C. § 111(c). Under the compulsory license, cable systems are not required to obtain the consent of the copyright owners of copyrighted material contained in the broadcast signal being retransmitted or negotiate license fees for the use of such copyrighted material, but, instead, must pay government-established fees for the right to retransmit copyrighted material contained in broadcast programming. 17 U.S.C. § 111(d). The 1976 amendments established that fees payable to copyright owners for compulsory licenses would be based on a percentage of each cable system's gross revenues and would be adjusted periodically by the newly formed Copyright Royalty Tribunal. *Id.*

[59] *See* 17 U.S.C. § 111(b).

[60] 47 CFR §§ 76.59(b); 76.61(b); 17 U.S.C. § 111.

[61] 47 CFR §§ 76.92 (cable network non-duplication), 76.101 (cable syndicated program exclusivity); 17 U.S.C. § 111(d) (limitations on exclusive rights; secondary transmissions of broadcast programming by cable).

[62] Satellite Home Viewer Act of 1988, Pub. L. No. 100-667, 102 Stat 3935, Title II (1988) (SHVA); 17 U.S.C. § 119.

[63] Network stations are generally television broadcast stations owned or operated by, or affiliated with, one or more of the television networks. *See* 47 U.S.C. § 339(d)(3) (stating that a "network station" for purposes of this section is defined by the Copyright Act); 17 U.S.C. § 119(d)(2) ("The term 'network station' means -- (A) a television broadcast station, including any translator station or terrestrial satellite stations that rebroadcasts all or substantially all of the programming broadcast by a network station, that is owned or operated by, or affiliated with, one or more of the television networks in the United States which offer an interconnected program service on a regular basis for 15 or more hours per week to at least 25 of its affiliated television licensees in 10 or more States; or (B) a noncommercial educational broadcast station…").

[64] The Copyright Act defined an unserved household as a "household that cannot receive, through use of a conventional stationary, outdoor rooftop receiving antenna, an over the air signal of a primary network television station affiliated with that network of Grade B intensity as defined by the Federal Communications Commission under Section 73.683(a) of Title 47 of the Code of Federal Regulations, as in effect on January 1, 1999." 17 U.S.C. § 119(d)(10)(A). An unserved household can also be one that is subject to one of four statutory waivers or exemptions. 17 U.S.C. § 119(d)(10)(B)-(E); *see also* 47 U.S.C. § 325(b)(2)(C) (providing an exemption from retransmission consent requirements for satellite carriage of network stations to unserved households), as amended by Section 101 of the STELAR (extending exemption through December 31,2019). Section 119(d)(9) of the Copyright Act defines "superstation" as a television station, other than a network station, licensed by the Federal Communications Commission, that is secondarily transmitted by a satellite carrier." 17 U.S.C. § 119(d)(9).

This license generally applies to the signals of superstations and network stations that satellite carriers retransmit to the public for private home viewing.[65]

20.   Satellite carriers have a statutory copyright license under the 1999 Satellite Home Viewer Improvement Act (SHVIA) for carriage of stations to any subscriber within a station's local market, without distinction between network and non-network signals or served or unserved households.[66] Prior to such carriage, DBS operators must obtain consent from broadcast licensees to retransmit the stations' signals to subscriber households.[67] In contrast to cable operators, DBS operators are not required to carry local broadcast television stations. However, if a DBS operator chooses to carry a local station in a particular DMA in reliance on the statutory copyright license, it generally must carry any qualified local station in the same DMA that makes a timely election for retransmission consent or mandatory carriage.[68] Just as with cable carriage of broadcast signals, if a broadcaster elects retransmission consent, the satellite carrier and broadcaster negotiate the terms of a retransmission consent agreement, with each side required to negotiate in good faith. In contrast to cable "must carry" requirements, satellite carriers are not required to carry television stations if they do not rely on the statutory license but instead privately negotiate for a copyright license.[69] Satellite carriers are not required to carry a station if its programming is duplicative of the programming of another station carried by the DBS operator in the same DMA unless the duplicating stations are licensed to communities in different states.[70] Satellite carriers also are not required to carry a station if the station fails to provide a good quality signal to the DBS operator's local receive facility.[71]

21.   Unlike cable operators, the "distant" (*i.e.,* out-of-market) signals that DBS operators can provide to their subscribers are limited. Under the Communications Act and copyright laws, a satellite carrier may provide distant broadcast television station signals to its subscribers only if local stations are unavailable to them as part of a local-into-local satellite package or over the air.[72] For example, in "short

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[65] 17 U.S.C. § 119.

[66] Satellite Home Viewer Improvement Act of 1999, Pub. L. No. 106-113, 113 Stat. 1501, 1501A-526 to 1501A-545 (1999) (SHVIA). *See also* 17 U.S.C. § 122(j) (the term "local market" means the DMA in which the station is located).

[67] 47 U.S.C. § 325. This carriage arrangement is commonly referred to as "local-into-local" carriage.

[68] *Id.* § 338. This requirement is commonly referred to as "carry one, carry all."

[69] *Id.* § 338. *See also Implementation of the Satellite Home Viewer Extension and Reauthorization Act of 2004 to Amend Section 338 of the Communications Act*, MB Docket No. 05-181, 20 FCC Rcd 14242 (2005) (Section 338(a)(4) supersedes carry-one, carry-all by mandating analog and digital carriage in Alaska and Hawaii); Satellite Home Viewer Extension and Reauthorization Act of 2004, Pub. L. No. 108-477, § 210, 118 Stat. 2809 (2004) (SHVERA) (creating § 338(a)(4) (mandatory carriage in Alaska and Hawaii)).

[70] 47 U.S.C. § 338(c)(1).

[71] *Id.* § 338.

[72] *See* 17 U.S.C. § 119; 47 U.S.C. § 339. The Communications Act and copyright laws set out two key restrictions on a satellite subscriber's eligibility to receive "distant" (out-of-market) signals. First, subscribers are generally eligible to receive a distant station from a satellite carrier only if the subscriber is "unserved" over the air by a local station of the same network. Second, even if "unserved," a subscriber is not eligible to receive a distant station from a satellite carrier if the carrier is making "available" to such subscriber a local station of the same network. *See* 47 U.S.C. § 339(a)(2); 17 U.S.C. § 119(a)(3). This second restriction on eligibility is commonly referred to as the "no distant where local" rule. A satellite carrier makes "available" a local signal to a subscriber or person if the satellite carrier offers that local signal to other subscribers who reside in the same zip code as that subscriber or person. 47 U.S.C. § 339(a)(2)(H). *See also* 17 U.S.C. § 119(a)(3)(F). The Copyright Act defines an "unserved household," with respect to a particular television network, as "a household that cannot receive, through the use of an antenna, an over the air signal containing the primary stream, or, on or after the qualifying date, the multicast stream, originating

(continued….)

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markets" — television markets where one of the four major television networks is not offered on the primary stream of a local broadcast station — satellite carriers are permitted to deliver a distant station affiliated with that missing network to subscribers in that market.[73] The mandatory carriage of broadcast signals from both distant and local broadcast stations is subject to royalty fees at a rate set forth by statute and collected by the U.S. Copyright Office.[74]

22. The Satellite Home Viewer Extension and Reauthorization Act of 2004 (SHVERA)[75] expanded the statutory copyright license to allow satellite carriers to carry significantly viewed stations,[76] which are treated as local stations with respect to a particular satellite community[77] in another market, thus allowing them to be carried by the satellite carrier in that community.[78] Satellite carriers are not required to carry out-of-market significantly viewed stations. If they do carry such significantly viewed stations, retransmission consent is required.[79] STELA reauthorized the statutory copyright license for satellite carriage of significantly viewed stations and moved that license from the distant signal statutory copyright license provisions in Section 119(a)(3) of the Copyright Act to the local signal statutory copyright license provisions in Section 122(a)(2) of the Copyright Act.[80] Thus, the Copyright Act defines

(Continued from previous page)
in that household's local market and affiliated with that network— (i) if the signal originates as an analog signal, [of] Grade B intensity as defined by the Federal Communications Commission in section 73.683(a) of title 47, Code of Federal Regulations, as in effect on January 1, 1999; or (ii) if the signal originates as a digital signal, [of] intensity defined in the values for the digital television noise-limited service contour…." 17 U.S.C. § 119(d)(10)(A). An unserved household can also be one that is subject to one of four statutory waivers or exemptions. *See id*. § 119(d)(10)(B)-(E).

[73] *See* 47 U.S.C. § 339(a)(2)(C); 17 U.S.C. § 119(d)(10); *Satellite Market Modification Order*, 30 FCC Rcd at 10443, n.256.

[74] Satellite carriers pay royalties on a per subscriber, per signal, per month basis; and must report periodically to the Copyright Office on which broadcast signals they have retransmitted.

[75] Section 202 of SHVERA created Section 340 of the Communications Act, 47 U.S.C. § 340, which authorized satellite carriage of significantly viewed stations. *See also Implementation of the Satellite Home Viewer Extension and Reauthorization Act of 2004, Implementation of Section 340 of the Communications Act*, MB Docket No. 05-49, Report and Order, 20 FCC Rcd 17278 (2005) (*SHVERA Significantly Viewed Report and Order*).

[76] Section 102 of SHVERA extended the statutory copyright license contained in 17 U.S.C. § 119(a) to apply "to the secondary transmission of the primary transmission of a network station or a superstation to a subscriber who resides outside the station's local market … but within a community in which the signal has been determined by the Federal Communications Commission, to be significantly viewed in such community, pursuant to the rules, regulations and authorizations of the Federal Communications Commission in effect on April 15, 1976, applicable to determining with respect to a cable system whether signals are significantly viewed in a community."

[77] *See* 47 CFR §§ 76.5(dd) (defining cable "community unit"), 76.5(gg) (defining a "satellite community").

[78] For copyright purposes, significantly viewed status means that cable and satellite providers may carry the out-of-market but significantly viewed station with the reduced copyright payment obligations applicable to local (in-market) stations. *See* 17 U.S.C. §§ 111(a), (c), (d), and (f), as amended by STELA § 104 (relating to cable statutory copyright license) and 122(a)(2), as amended by STELA § 103 (relating to satellite statutory copyright license).

[79] *See* 47 U.S.C. § 340(d). Pursuant to SHVERA, DBS operators were granted the right to retransmit out-of-market significantly viewed commercial broadcast stations to subscribers in the community in which the station is deemed significantly viewed, provided the local station affiliated with the same network as the significantly viewed station is offered to subscribers. SHVERA permits a satellite carrier to privately negotiate with a local network station to obtain a waiver of the requirement that the local station be offered. 47 U.S.C. § 340(b)(4). SHVERA provides that, as in the cable context, satellite carriers pay reduced copyright fees for retransmission of significantly viewed stations. 17 U.S.C. § 119(a).

[80] *See* STELA § 103.

significantly viewed signals as another type of local signal, rather than as an exception to distant signals.[81] Section 122(a)(2) explicitly limits significantly viewed status to those signals that have been determined by the Commission to be significantly viewed pursuant to the rules in effect as of April 15, 1976.[82] Satellite carriers are required to provide written notice to local stations before they begin carriage of significantly viewed stations.[83]

23.   Section 102 of the STELAR amended the Communications Act and the Copyright Act to give the Commission authority to modify a commercial television broadcast station's local television market for purposes of satellite carriage rights.[84] The Commission previously had such authority to modify markets only in the cable carriage context.[85] On September 2, 2015, the Commission implemented Section 102 of the STELAR by revising the current cable market modification rule, Section 76.59, to apply also to satellite carriage, while adding provisions to the rules to address the unique nature of satellite television service.[86] As discussed above, the market modification rules permit the modification of a local television market to include additional communities or to exclude certain communities pursuant to appropriate request.[87] Such market modifications enable avoidance of rigid adherence to Nielsen's DMA assignments by adding or removing communities from a DMA-based local television market for the purposes of broadcast station carriage rights.[88] In addition, the Commission amended the existing rules to reflect the STELAR provisions that apply uniquely to satellite carriers, such as an exception if the resulting modified carriage is "not technically and economically feasible."[89] The Commission also concluded that the purpose of the STELAR in promoting consumer access to in-state programming would be better facilitated by also permitting a county governmental entity (such as a county board, council, commission, or other equivalent subdivision) to file a satellite market modification petition.[90] The new rules became effective on February 25, 2016.[91]

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[81] *STELA Significantly Viewed Report and Order*, 25 FCC Rcd 16383, 16387, para. 4 & n.23. In the *STELA Significantly Viewed Report and Order*, the Commission revised its satellite television significantly viewed rules to facilitate satellite carriage of significantly viewed stations and thereby provide satellite subscribers with greater choice of programming and to improve parity and competition between satellite and cable carriage of broadcast stations. *Id.* at 16411, para. 55.

[82] 17 U.S.C. § 122(a).

[83] 47 CFR § 76.54(e). This notice requirement does not apply to cable system carriage of significantly viewed stations.

[84] STELAR §§ 102, 204, 128 Stat. at 2060-62, 2067. Like the existing cable provision, the STELAR provision pertains only to "commercial" stations, thus excluding noncommercial stations from seeking market modification. *See* 47 U.S.C. § 338(*l*)(1).

[85] *See* 47 U.S.C. § 534(h)(1)(C). *See also* 47 CFR § 76.59.

[86] *Amendment to the Commission's Rules Concerning Market Modification; Implementation of Section 102 of the STELA Reauthorization Act of 2014*; MB Docket No. 15-71, Report and Order, 30 FCC Rcd 10406 (2015) (*Satellite Market Modification Order*).

[87] 47 CFR § 76.59; *see* 47 U.S.C. §§ 338(*l*) and 534(h)(1)(C).

[88] 47 CFR § 76.59.

[89] *Satellite Market Modification Order*, 30 FCC Rcd at 10409, para. 4.

[90] *Id.*

[91] *Notice of Effective Date of STELAR Market Modification Rules Requiring OMB Approval Media Bureau Now Accepting Satellite Market Modification Petitions*, MB Docket No. 15-71, Public Notice, DA 16-203 (MB Feb. 25, 2016).

24. *Program Exclusivity*. A broadcaster may carry network and syndicated programming on its local television station or stations only with the permission of the networks or syndicators that own or hold the rights to that programming. Broadcast stations often negotiate to be the exclusive distributor of specific programming in a local market. The Commission's program exclusivity rules, along with provisions in network and syndication programming contracts, protect the rights of stations to be the exclusive distributor of programming in a local market.[92] The network non-duplication rules protect a local commercial or noncommercial broadcast television station's right to be the exclusive distributor of network programming within a specified zone and require programming subject to the rules to be blacked out when carried on another station's signal imported by an MVPD into the local station's zone of protection.[93] Similarly, the syndicated exclusivity rules protect the exclusive distribution rights of a commercial broadcast television station or a distributor of syndicated programming within a 35-mile geographic zone surrounding a television station's city of license.[94] On March 31, 2014, the Commission released a Further Notice of Proposed Rulemaking, seeking comment on whether to modify or eliminate the network non-duplication and syndicated exclusivity rules.[95]

25. On September 30, 2014, the Commission adopted a Report and Order that repealed the sports blackout rules, which prohibited cable and satellite operators from airing any sports event that had been blacked out on a local broadcast station.[96] Finding that the sports industry had evolved dramatically over the last forty years, the Commission concluded that the sports blackout rules were no longer necessary to ensure that sports programming remains widely available to television viewers.[97] The Commission also concluded that the elimination of the sports blackout rules would not adversely impact localism in broadcasting.[98] The Commission noted that, in the absence of sports blackouts, local stations in markets otherwise prone to blackouts may carry more games and earn more advertising revenues, which would benefit localism.[99]

III. SECTION 109(a)(1)(A): ANALYSIS OF FINDINGS

26. Section 109(a)(1)(A) of the STELAR requires the Commission to analyze "the extent to which consumers in each local market have access to broadcast programming from television broadcast stations located outside their local markets, including through carriage by cable operators and satellite carriers of signals that are significantly viewed (within the meaning of Section 340 of the

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[92] The exclusivity rules may be invoked by stations that elect retransmission consent in their local markets, even if they are not actually carried by the MVPD, to prevent an MVPD from carrying programming of a distant station that duplicates local broadcast station programming. For example, an in-market station that fails to reach agreement for retransmission consent and subsequently refuses to permit an MVPD to carry its signal can still invoke the network non-duplication and syndicated exclusivity rules to require the blackout, in market, of programming that would otherwise be provided by the in-market station.

[93] *See* 47 CFR §§ 76.92, 76.93, 76.122.

[94] *See id.* §§ 76.101, 76.103, 76.123.

[95] *Amendment of the Commission's Rules Related to Retransmission Consent*, MB Docket No. 10-71, Report and Order and Further Notice of Proposed Rulemaking, 29 FCC Rcd 3351, 3375, para. 40 (2014). The proceeding remains pending.

[96] *Sports Blackout Rules*, MB Docket No. 12-3, Report and Order, 29 FCC Rcd 12053 (2014). The elimination of the sports blackout rules became effective as of November 24, 2014. *See* Sports Blackout Rules, 79 Fed. Reg. 63,547, 63,547 (Oct. 24, 2014).

[97] *Sports Blackout Rules*, 29 FCC Rcd at 12054, 12056, 12060-61, paras. 1, 6, 12.

[98] *Id.* at 12084, para. 40.

[99] *Id.*

Communications Act of 1934 (47 U.S.C. 340)).”[100] We interpret Section 109(a)(1)(A) to require the Commission to identify in each DMA the out-of-market broadcast stations available over the air or carried by DBS, cable, and telephone MVPDs, and the number of consumers that have access to such out-of-market broadcast stations through any of these distribution means.[101] By “out-of-market” stations, we mean broadcast stations that are licensed to a community located in a market other than that in which the consumer resides. As noted, out-of-market stations are also referred to as “distant” or “imported” signals, as they are distant to the consumer's own local market and thus would need to be imported into the market if they were to be carried by an MVPD.

27.   As noted above, the Commission previously reported to Congress in 2011 regarding the extent to which consumers in a state receive broadcast signals from stations licensed to the same state in which they reside or to a different state.[102] While the data gathered in the *In-State Programming Report* provided information about consumer access to in-state and out-of-state broadcast stations, the focus in this Report, based on the new and different directive in Section 109(a)(1)(A) of the STELAR, is on consumers' access to out-of-market stations, and so we include data on such stations that are located either in the same or a different state as the consumer.

28.   We note that, consistent with the limitations outlined in the *STELAR Report PN*,[103] in conducting our analysis we were unable to locate a single data source that would allow us to evaluate the extent to which consumers receive out-of-market broadcast programming from television broadcast stations, DBS, cable, and telephone MVPDs.[104] Accordingly, in order to examine this issue we have analyzed data and information from multiple sources, as outlined in further detail below. Our analysis consists of four primary components.[105] First, consistent with the *STELAR Report PN*, we have examined the extent to which consumers have access to out-of-market signals received over the air by constructing a database with details of the predicted signal reach of broadcast television stations.[106] Second, we have reviewed the out-of-market signals carried by DBS providers to analyze the degree to which satellite subscribers have access to out-of-market signals.[107] Third, we have looked at Nielsen data in order to

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[100] STELAR § 109(a)(1)(A).

[101] *STELAR Report PN*, 30 FCC Rcd at 1906.

[102] *See In-State Broadcast Programming: Report to Congress Pursuant to Section 304 of the Satellite Television Extension and Localism Act of 2010*, MB Docket No. 10-238, Report, 26 FCC Rcd 11919 (2011).

[103] *STELAR Report PN*, 30 FCC Rcd at 1906-7.

[104] No commenter provided any suggestions for a single data source. The National Association of Broadcasters (NAB) and the Western Telecommunications Alliance – Advocates for Rural Broadband (WTA) confirm our tentative conclusion and state that they are unaware of any single data source that would enable the Commission to determine access to out-of-market broadcast programming across all distribution technologies. *See* National Ass'n of Broadcasters (NAB) Comments at 5; Western Telecommunications Alliance – Advocates for Rural Broadband (WTA) Comments at 4-5; WTA Reply at 2.

[105] We similarly noted this issue and the difficulty of obtaining useful data for cable and telephone MVPDs in the *In-State Programming Report*. *See In-State Programming Report*, 26 FCC Rcd at 11942, para 40.

[106] *STELAR Report PN*, 30 FCC Rcd at 1906-7.

[107] For purposes of this Report, we considered data about out-of-market broadcast stations carried by the two DBS operators throughout a market or portions of a market (e.g., one or more counties in a market) and do not consider carriage of out-of-market stations provided to particular “unserved” subscriber households not otherwise available throughout the market or portions of the market. Specifically, the out-of-market broadcast signals we examine for DBS include significantly viewed stations, network fill-ins imported into “short markets,” and stations carried pursuant to specific statutory copyright exceptions. *See* 47 U.S.C. § 339(a)(2)(C); 17 U.S.C. §§ 119(d)(10), 122(a)(2), 122(a)(4). For the purposes of this Report, we exclude from our analysis of “distant” signals those

(continued….)

examine whether Nielsen has recorded viewership of out-of-market signals in a market other than the station's home market. Fourth, we have conducted a number of case studies to examine the extent to which consumers in selected counties within DMAs that encompass multiple states have access to distant signals via cable, telephone MVPDs, DBS, or over the air, including full power, Class A, low power, and TV translator stations.

29.   Noting that aggregating information at the DMA level might not provide sufficient analysis, we proposed to look at consumers' access to out-of-market signals at the county level as well as the DMA level.[108] We received no comments suggesting that our analysis should be done using a different geographic area. Therefore, the following analysis looks at both DMAs and counties within DMAs, as appropriate, in order to assess the extent to which consumers have access to distant signals consistent with Section 109.

30.   With respect to the first component, the availability of broadcast stations over the air, we adopt a methodology similar to that used by the Bureau to calculate reception of in-state signals by households for the *In-State Programming Report*.[109] To perform this analysis, the Bureau used the Commission's Office of Engineering and Technology Bulletin No. 69 (OET Bulletin No. 69) methodology to predict the service area of each broadcast station.[110] The National Association of Broadcasters (NAB) suggests that, in order to provide a complete picture of consumers' access to broadcast programming, multicast as well as primary streams should be included in the analysis.[111] While such information is not readily or consistently available for all broadcast stations, we have attempted to include information about multicast channels where available, for example in the Case Studies. For our analysis of over the air reception we include full power commercial and noncommercial educational television stations. We also include separately an analysis of over the air reception of low power, Class A, and television translator stations.

31.   For the second component, DBS carriage of broadcast stations, we have used carriage information provided by DIRECTV and DISH.[112] For data on significantly viewed stations, DIRECTV and DISH provided the Bureau with lists of the broadcast stations that they currently carry pursuant to the station's significantly viewed status and indicated the markets in which these stations are carried.[113] DISH and DIRECTV also provided the Bureau with lists of the stations that they carry in short markets to fill in a network missing in a particular market. Lastly, DISH and DIRECTV have identified stations that they carry in certain states pursuant to specific statutory copyright exceptions.

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stations that are provided on a subscriber-by-subscriber basis by satellite MVPDs to unserved subscribers as these stations are not available to all consumers in a market (or portions/counties of a market) but are unique to a particular unserved household. *See* 47 U.S.C. § 339(a)(2); 17 U.S.C. § 119(a)(3).

[108] *STELAR Report PN*, 30 FCC Rcd at 1906-7.

[109] *In-State Programming Report*, 26 FCC Rcd at 11932, para 21.

[110] Federal Communications Commission, Office of Engineering and Technology Bulletin No. 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, Feb. 6, 2004 (https://www.fcc.gov/general/oet-bulletins-line). OET Bulletin No. 69 provides guidance on the use of the Longley-Rice propagation model to evaluate television service, coverage, and interference. *See* OET Bulletin No. 69 at 1.

[111] NAB Comments at 7-8.

[112] In the *STELAR Report PN*, we proposed also to potentially use data collected under Section 108 of the STELAR. *STELAR Report PN* at 1906. However, we find that the information obtained directly from the DBS operators offers more complete data about DBS carriage of out-of-market broadcast stations.

[113] DISH informed the Bureau that it does not currently carry any broadcast stations pursuant to the significantly viewed rules.

32. Third, we attempted to analyze access to out-of-market stations within a market by looking at actual viewership of distant signals. Specifically, we examined Nielsen data for instances where a station garnered ratings in a market other than the market to which it is assigned. As discussed in the *STELAR Report PN*, we used efforts similar to those used for the *In-State Programming Report*, and sought to analyze Nielsen data to identify for each DMA the number of out-of-market broadcast stations, if any, that earned a sufficient rating from all viewing sources to warrant inclusion in Nielsen's measurement during the relevant reporting period.[114]

33. Fourth, in light of the limitations on aggregated information regarding the carriage of signals by cable and telephone MVPDs, we conducted a number of targeted case studies to analyze the availability of programming by any method, but particularly by cable or telephone MVPD. These case studies allowed us to examine a number of specific counties and markets in a more in-depth manner, and to identify and discuss the extent to which consumers in those areas have access to distant signals via the various distribution methods. The case studies also sought to gather information about the programming carried by stations received in a particular county, as well as whether the station was located in the same or a different state as the county.

34. In determining our course of analysis and honing our focus to these four primary means of examining access to out-of-market signals, we considered and discarded several other possible avenues because of various limitations. For example, the *STELAR Report PN* discussed that, while the Commission collects cable system data in its Annual Report on Cable Television Systems (FCC Form 325) and in its Annual Report on Cable Prices, these are not comprehensive or particularly suitable for our purposes here.[115] As we noted in the *STELAR Report PN*, these data yield limited information about a small group of systems and may omit many relevant systems or geographic areas.[116]

35. In addition, the *STELAR Report PN* sought comment on whether there were other comprehensive data sets available that would allow the Commission to perform the required analysis. NAB and WTA both note that local cable systems must file semi-annually with the Copyright Office a listing of all television stations they carried, both in and outside the cable system's footprint.[117] Further, they state that telephone companies providing MVPD service that avail themselves of the cable compulsory license must also file these lists.[118] However, both NAB and WTA also note that these data are not reported on a DMA or state-wide basis, which would make comparisons with over the air reception and DBS carriage more difficult.[119]

36. We also examined whether data from the Warren Cable Television Factbook could be used for a systematic examination of the out-of-market signals available to consumers via cable systems

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[114] *STELAR Report PN* at 1907. *See also In-State Programming Report* 26 FCC Rcd at 11934, 11940-41, paras 27, 37.

[115] *STELAR Report PN* at 1907-8. The Commission requires annual Form 325 filings from cable systems that serve 20,000 or more subscribers and from a sample of systems with fewer than 20,000 subscribers. *See* 47 CFR § 76.403.

[116] *STELAR Report PN* at 1907-8. Further, the FCC Form 325 does not provide data on a granular level such that it could be used for a DMA or county level analysis. *See id.* at 1907. WTA claims that almost all of its members providing cable service and negatively impacted by the current DMA assignment system are "exempt" from the Form 325 requirement. *See* WTA Comments at 4 (WTA's claimed exemption refers to the requirement that only a sample of systems with fewer than 20,000 subscribers are required to file the form each year.).

[117] NAB Comments at 6.

[118] *Id.*; WTA Reply at 2-3.

[119] NAB Comments at 6 n.12; WTA Reply at 2-3.

or telephone MPVDs. While some information regarding the carriage of distant signals can be gleaned from this source, after exploration and efforts to manipulate the available data we determined that various limitations made this information unsuitable for our purposes. In addition to a lack of data at the county level, sufficient data were not present for all DMAs. Further, for those DMAs represented, it was impossible to determine precisely what population or percentage of the DMA a particular cable system serves in those cases where there was a positive indication that a cable system in a DMA carried an out-of-market signal. In addition, lack of continuity of call signs, market names, and station properties across data sets compounded the challenges of using this source, which was not designed for the type of analysis we sought to perform.

37.   NAB incorporated by reference the study by BIA/Kelsey it submitted in response to the *2011 Public Notice* that used the Copyright Office data to develop an estimate of out-of-state carriage by cable companies.[120] This study noted that the data were reported by cable system and provided one principal city and corresponding county and state.[121] Using this information, BIA/Kelsey mapped these data into DMAs, but noted that the reporting unit may cross multiple counties, DMAs, and states.[122] Given our interpretation of Section 109(a)(1)(A) that the analysis should be performed on a DMA and county level rather than a system-wide basis, however, the data from the Copyright Office, although potentially extensive, are not ideal for our purposes. The Copyright Office data are provided on a cable system basis, and, although some information is provided on the location of the system, the data are not granular enough to map directly into either a DMA or county. Therefore, numerous assumptions would need to be made to create a data set that could be combined with over the air broadcast television and DBS data. We are concerned that utilizing data that require a significant number of assumptions might not provide Congress with an analysis with a sufficient level of precision.

A.   **Analysis of Access to Out-of-Market Signals Over the Air**

38.   In order to analyze the extent to which consumers have access to out-of-market television stations received over the air, we first constructed a database compiling data on the predicted coverage of full power television stations. To calculate the values contained in the Lists provided in Appendix A, Bureau staff estimated broadcast television station coverage and interference using the Office of Engineering and Technology's (OET) Bulletin No. 69[123] as implemented by *TVStudy*[124] on a 2 km x 2 km grid cell basis.[125] A single point within each cell was analyzed for station coverage, and the population of

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[120] Comments of the National Association of Broadcasters, MB Docket 10-238, filed Jan. 24, 2011, Attachment A at 9-11 (2011 NAB Comments).

[121] *Id.*, Attachment A at 10.

[122] *Id.*, Attachment A at 10 n.12.

[123] OET Bulletin No. 69 (Feb. 6, 2004) provides guidance on the use of the Longley-Rice propagation model and U.S. census blocks to evaluate TV service coverage and interference. The bulletin is available at https://www.fcc.gov/general/oet-bulletins-line.

[124] The FCC's Office of Engineering and Technology (OET) has released software, called *TVStudy*, which interfaces with data contained in FCC Media Bureau's CDBS/LMS databases and is used to perform coverage and interference analyses of full service digital and Class A television stations. Additional information regarding *TVStudy* is available at https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/general/tvstudy-interference-analysis.

[125] We have used the OET Bulletin No. 69 methodology, known as the Longley-Rice propagation model, to determine the predicted service area for purposes of our Section 109(a)(1)(A) analysis. The data set forth in this Report are based on a predictive model regarding the availability of broadcast television stations via over the air transmission. Consistent with our assessment of the questions posed by Sections 109 of the STELAR, we believe that this approach yields the most accurate data with respect to the analysis required by Section 109(a)(1)(A). In this Report, with respect to over the air broadcasting, we use the terms "receive" and "have access to" interchangeably.

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that cell was determined by summing the population for each census block[126] whose internal point[127] is within that cell. Population data come from the 2010 Census.[128] County borders were generated using GIS files from the Census Bureau.[129] Details about each broadcast television station were derived from CDBS.[130]

39. The data in Appendix A's Lists include the variables listed in Table 1 below.

Table 1
Over the Air Full Power Television
Database Variables

Variables
DMA of County
Station's Assigned DMA
Station's Facility ID
Station's Call sign
Station's Service Type
Station's Network Affiliation
Station's Community of License
Station's State of License
County Name
State
Population Served by Station in County
Total Population of County
Percentage of County Population Served by Station

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We define these terms to mean that populations fall within the predicted over the air service area of out-of-state broadcast stations. Nonetheless, we recognize that certain areas may not be able to access a station for various reasons, including signal interference or the lack of a suitable antenna or other equipment. Moreover, one's ability to "receive" or "have access to" the signal of a broadcast television station via over the air transmission may be impacted by a range of other factors that we cannot determine and assess for the purposes of this Report. The Longley-Rice propagation model cannot account for these situations. Therefore, the data set forth in this Report and the Appendices are predictions of the over the air broadcast service that should be available in certain markets and to certain populations.

[126] Census blocks are statistical areas bounded by visible features, such as streets, roads, streams and railroad tracks, and by non-visible boundaries, such as selected property lines and city, township, school district and county limits, and short line-of-sight extensions of streets and roads. Census blocks do not cross county lines or state lines. Census blocks cover the entire territory of the United States, Puerto Rico, and the Island Areas. Census blocks nest within all other tabulated census geographic entities and are the basis for all tabulated data. *See* 2010 Census Geographic Terms and Concepts, https://www.census.gov/geo/reference/terms.html.

[127] The internal point of a census block is a set of geographic coordinates (latitude and longitude) that is located within a census block. *See* http://www.census.gov/geo/www/geo_defn.html#InternalPoint.

[128] *See* http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

[129] *See* http://www.census.gov/geo/maps-data/. Grid cells can overlap county borders, so population estimates may differ slightly, less than one percent, from Census data. Further, as grid cells can overlap county borders, in some cases a small amount of population from one county is added to an adjacent county, with the result that a station may be shown as serving slightly more population than exists within the county. Such deviations are typically within 1 percent or less of the population.

[130] *See* http://licensing.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm.

40.   *Full Power Television Stations.* Based on the predicted coverage for the 1,782 full power commercial and noncommercial broadcast television stations as of March 31, 2016, we are able to analyze the DMAs and counties predicted to receive a viewable signal from any given station, as well as the number and percentage of persons within either a DMA or a particular county predicted to receive such a signal. Further, knowing the DMA and state to which each station and county is assigned permits us to consider whether the station is in-market or out-of-market, or in-state or out-of-state, with respect to viewers in each county. As a result, by considering the number of out-of-market stations predicted to be received across all counties and all DMAs, we are able to analyze the extent to which consumers on average have access to out-of-market signals. For each county and DMA in the United States, List 5 in Appendix A provides a complete listing of every out-of-market full power broadcast television station, commercial or noncommercial, that can be received over the air.[131] Analysis of this station database yields information about the level of access to out-of-market stations, as discussed further below.

41.   Based on our analysis, the Bureau finds that the number of out-of-market full power signals available per DMA ranges from zero to 54 signals. Analysis shows a mean of approximately 20.6 out-of-market full power television signals available in a DMA, with a standard deviation of approximately 12.4.[132] Appendix A – List 1 attached hereto, provides the signal counts, the DMA population, and out-of-market signals adjusted for coverage of DMA population for each DMA. Table 2 below presents the DMAs with no out-of-market full power television signals. In all, we determined that there are 12 DMAs that have no out-of-market full power signals, including all three Alaska DMAs and the single Hawaii DMA, which is consistent with their geography and lack of adjacent markets.

Table 2
DMAs with No Full Power Out-of-Market Signals Over the Air

DMA	Population
Anchorage, AK	445,857
Fairbanks, AK	104,995
Juneau, AK	59,192
Honolulu, HI	1,293,210
Presque Isle, ME	71,870
Bend, OR	157,733
Casper-Riverton, WY	142,751
El Paso (Las Cruces), TX	1,013,356
Harlingen-Weslaco-Brownsville-McAllen, TX	1,264,091
Las Vegas, NV	1,995,215
Santa Barbara-Santa Maria-San Luis Obispo, CA	693,532
Tucson (Sierra Vista), AZ	1,159,029

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[131] Appendix A – List 5 is available at https://www.fcc.gov/2016-stelar-section-109-report-congress.

[132] A standard deviation is a measure of how far the values of a statistical distribution range from the mean. With a normal distribution (a statistical term that approximates to what is referred to as the "bell curve"), 68 percent of the population will fall within one standard deviation plus or minus of the mean, and 95 percent will fall within two standard deviations plus or minus of the mean. While the distribution of out-of-market signals is not a normal distribution, this rule is still an approximation of the distribution of out-of-market signals.

42.   Our analysis of out-of-market signals by DMA finds that the top-five DMAs in terms of access to out-of-market signals are all located on the east coast of the United States, which again is consistent with the close proximity of numerous markets and stations. These top-five DMAs have access to between 47 and 54 out-of-market full power television signals received over the air.[133] Further, these five DMAs, in terms of population are large and reflect approximately 10.64% percent of the U.S. population.[134] To take into account that the five DMAs with the most out-of-market signals are also DMAs with high population, we weight the number of out-of-market signals by population.[135] Weighing the out-of-market signals by population results in a weighted average of approximately 27.8 out-of-market signals across all 210 DMAs.[136]

43.   Another way to account for the number of out-of-market signals being skewed to these five populous DMAs is to create a "viewability" index based on the average percent of the population within a DMA that can receive out-of-market signals.[137] To create this viewablity index we use predicted coverage of out-of-market stations and calculate for each station the percent of the population of each county within each DMA the signal covers. Within each DMA, we take the mean county population coverage of out-of-market signals, and multiply this by the number of out-of-market signals by DMA.[138] Our analysis finds that, when accounting for the relative population of the markets, the viewability index yields a mean of approximately 12.7 "viewable out-of-market signals" by DMA with a standard deviation of 8.1.

44.   Appendix A – List 2 presents an analysis of the number of out-of-market full power television signals available by county. This Appendix provides information on the county name, state, county DMA, total population of the county, number of out-of-market signals, and out-of-market signals adjusted for coverage of county population. This analysis finds that, when considered on a county level, the range of out-of-market full power signals available in a county is between zero and 37 signals. Riverside County, California, located in the Palm Springs, California DMA, is at the top of the scale with 37 out-of-market full power signals available to the county, largely as a result of Riverside's proximity to the Los Angeles and San Diego DMAs.

45.   Out of the 3,064 counties analyzed nationwide, 583 counties receive no out-of-market full power signals. Appendix A – List 3 provides details about such counties. The mean number of out-

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[133] The top-five DMAs are: New York, NY with access to 54 out-of-market signals; Charlotte, NC with 50; Atlanta, GA with 49; Hartford-New Britain-Middletown, CT with 49; and Raleigh Durham, NC with 47.

[134] Internal Bureau analysis based on building DMA population from internal county populations. Note that this will differ from Nielsen analysis, which looks at television households, not total population.

[135] The arithmetic (unweighted) average calculates the average number of signals *per DMA*. However, since populations vary widely by DMA, this figure does not represent what an average person can view across DMAs; the unweighted average will treat a DMA with a tiny population the same as a DMA with the greatest population. To account for this issue, weighting the average number of signals by the population of the DMA produces an average that can be regarded as the average number of out-of-market signals an individual might receive.

[136] The unweighted average of out-of-market signals by DMA is 20.6333 with a standard deviation of 12.4129.

[137] Not all out-of-DMA signals cover the same percentage of a DMA; some cover virtually the entire DMA, and others cover less than 5 percent of a DMA. To adjust for this fact, we created a "viewability index": based on predictions of the percentage of the counties of a DMA an out-of-market signal can reach, we multiply this percentage by the number of out-of-market signals to adjust the number of out-of-market signals for the percentage of a DMA the signals actually reach.

[138] If a DMA had three out-of-market stations and all of them reached the entire population, the number of out-of-market signals would equal the viewability index of signals at 3. If, however, each station covered one-third of the population, the number would still be three, but the viewability index would be $0.333 * 3 = 1$.

of-market full power signals available on a county basis is approximately 4.7 signals with a standard deviation of 4.6. Weighted by county population, the mean is approximately 5.9 out-of-market signals available in a county. However, just as was the case for DMAs, there are several large counties that skew this average upward, and therefore we calculate a viewability mean on a county basis as well.[139] Our analysis finds the county mean viewable out-of-market signals is approximately 2.8 with a standard deviation of 3.7.[140]

46.   We note that underpinning both the DMA and county viewability numbers is the fact that not every in-market or out-of-market full power television signal analyzed reaches 100 percent of either a county or DMA. Thus, the mean percentage of the population of a county that an in-market station signal reaches is approximately 64.5 percent with a standard deviation of 0.39.[141] For out-of-market signals, the mean percentage of a county a signal reaches is approximately 44 percent. Further, when aggregating to the DMA level, the mean percentage of a county that an in-market station signal reaches is approximately 48 percent with a standard deviation of 0.41, and for out-of-market signals the mean is approximately 46.6 percent with a standard deviation of 0.41. Finally, when aggregating to a county level, the mean percentage of a county an in-market station signal reaches is approximately 63.5 percent with a standard deviation of 0.39, and for out-of-market signals the mean percentage of a county a signal reaches is approximately 61.4 percent with a standard deviation of 0.4.

47.   *Low Power, Class A, TV Translators.* In addition to the reception of out-of-market full power stations, we also examined reception of out-of-market low power, Class A, and TV translator stations (referred to collectively in this section as "low power stations" or "low power signals"). Appendix A – List 6 provides a complete listing of every out-of-market low power, Class A, and TV

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[139] To illustrate the effect of large counties on unadjusted averages, the 35 counties with 20 or more out-of-market signals (Riverside County, California; Hampden County, Massachusetts; Hampshire County, Massachusetts; Lancaster County, Pennsylvania; Franklin County, Massachusetts; Hunterdon County, New Jersey; San Diego County, California; Kern County, California; Carroll County, Maryland; Kent County, Maryland; Windham County, Connecticut; Walworth County, Wisconsin; Warren County, New Jersey; Columbiana County, Ohio; Cecil County, Maryland; Harford County, Maryland; Queen Anne's County, Maryland; Delaware County; New York; Worcester County, Massachusetts; Richmond County; North Carolina; Jackson County, Michigan; Kent County, Rhode Island; Providence County, Rhode Island; Berrien County, Michigan; Mahoning County, Ohio; Baltimore County, Maryland; Howard County, Maryland; Montgomery County, North Carolina; Madison County, North Carolina; Litchfield County, Connecticut; New Haven County, Connecticut; Putnam County, Florida; Washington County, Rhode Island; and Greene County, Tennessee) have a mean population of 387,903, whereas the mean county population of all counties is only 100,541. Thus, the number of out-of-market signals skews toward large counties, which is not surprising because high population areas tend to have a high density of broadcast signals. For these counties, the mean number of out-of-market signals is 23, but the viewability index is 15.16.

[140] Because the coverage statistics for stations are calculated on a county basis, the calculation of the viewability index by county is simpler than by DMA. We multiple the total county coverage by out-of-market stations by the number of out-of-market stations by county to generate this statistic.

[141] To calculate the viewability average, we used the station's predicted population coverage as described above. However, in about 7.5 percent of the observations the data show that more than 100 percent of the population of the county can see the signal. As noted above, this is a result of the fact that grid cells can overlap county borders, in which case a small amount of population from one county is added to an adjacent county resulting in a station being reported as serving slightly more population than exists within the county. To correct for this, we replaced any value over 100 percent with 100 percent, and doing so altered the numbers only slightly.

translator station, commercial or noncommercial, that can be received over the air in each county and DMA in the United States.[142]

     48.   Based on our analysis, the Bureau finds that the number of out-of-market low power station signals available per DMA ranges from zero to 12 signals. Analysis shows a mean of approximately 0.57 out-of-market low power signals available in a DMA, with a standard deviation of approximately 1.62.[143] However, our analysis shows that in the vast majority of markets – 164 DMAs – there are no out-of-market low power signals available. List 4 in Appendix A attached hereto, identifies those DMAs with no out-of-market low power signals.[144] This is likely a result of the fact that low power stations have much smaller signal contours than full power stations, and thus do not cover as much area. For those markets for which our analysis does find out-of-market low power signals available, List 4 in Appendix A provides the signal counts, the DMA population, and out-of-market signals adjusted for coverage of DMA population.

     49.   Our analysis by DMA finds that the following six markets have access to the most out-of-market low power signals: Denver, CO, with access to 12 signals; Missoula, MT, with access to ten signals; Seattle-Tacoma, WA, with access to nine signals; Salt Lake City, UT, with access to eight signals; Bakersfield, CA, with access to seven signals; and Phoenix, AZ, with access to six signals. No other DMA has access to more than four out-of-market low power signals.

     50.   As with full power stations above, we have considered a population-weighted mean, which results in a weighted average of approximately 0.94 out-of-market signals available per market across all 210 DMAs. Further, our analysis finds that, when accounting for the relative population of the markets, the viewability index yields a mean of approximately 0.199 "viewable out-of-market signals" by DMA, with a standard deviation of 0.528.[145]

     51.   In addition to looking at reception of out-of-market low power stations on a DMA basis, we also examined reception on a county basis. Out of the 3,064 counties analyzed nationwide, the vast majority of counties – 2,530 counties – receive no out-of-market low power signals. A complete listing of these counties without access to any out-of-market low power signals is found in Appendix A – List 8.[146] With respect to the remaining counties, where low power signals are present, Appendix A – List 7 presents an analysis of the number of out-of-market low power television signals available per county.[147] List 7 provides information on the county name, state, county DMA, total population of the county, number of out-of-market signals, and out-of-market signals adjusted for coverage of county population. This analysis finds that when considered on a county level, the range of out-of-market low power signals available in a county is between zero and seven signals. Kern County, CA in the Bakersfield, CA DMA

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[142] Nielsen does not collect data for certain unmeasured parts of Alaska. Accordingly, we have excluded 123 low power observations (out of a total of 16,357) from our analysis, as these observations occur in the unmeasured parts of Alaska. Appendix A – List 6 is available at https://www.fcc.gov/2016-stelar-section-109-report-congress.

[143] *See supra* note 132.

[144] DMAs with no out-of-market low power signals are identified in Appendix A – List 4 by having a 0 count of out-of-DMA signals.

[145] As noted above, in order to calculate the viewability average we used the station's predicted population coverage. However, because grid cells can overlap county borders, in some cases a small amount of population from one county is added to an adjacent county, resulting in a station being reported as serving slightly more population than exists within the county. To correct for this, we replaced any value over 100 percent with 100 percent, and doing so altered the numbers only slightly.

[146] Appendix A – List 8 is available at https://www.fcc.gov/2016-stelar-section-109-report-congress.

[147] Appendix A – List 7 is available at https://www.fcc.gov/2016-stelar-section-109-report-congress.

and Sanders County, MT in the Missoula, MT DMA are at the top of the scale with 7 out-of-market low power signals available to each county. Douglas County, WA in the Seattle-Tacoma, WA DMA receives four out-of-market low power signals, and no other county receives more than three.

52. The mean number of out-of-market low power signals available on a county basis is approximately 0.059 signals with a standard deviation of 0.337. Weighted by county population, the mean is approximately 0.075 out-of-market low power signals available in a county. The viewability mean calculated on a county basis reflects a vanishingly small mean of approximately 0.017 out-of-market low power signals, with a standard deviation of 0.16.

B. Carriage of Certain Out-of-Market Signals by DBS Providers

53. In addition to the stations available to consumers directly from the reception of broadcast television stations over the air, we also looked at the out-of-market stations available to consumers from DBS providers. Information on the carriage of out-of-market signals by DBS providers was obtained from the DBS providers directly. DIRECTV submitted data to Bureau staff regarding the broadcast stations that it currently carries pursuant to the station's significantly viewed status and indicated the markets in which these stations are carried. DISH confirmed to Bureau staff that it does not currently carry any stations pursuant to the significantly viewed rules. DIRECTV and DISH also provided the Bureau with lists of the stations that are carried in short markets to fill in a network missing in those particular markets.[148] Furthermore, DIRECTV and DISH identified stations that they carry in certain states pursuant to the specific statutory copyright exceptions in 17 U.S.C. Section 122. Appendix B hereto compiles the information and provides specific information describing the out-of-market broadcast stations available to consumers via DBS.

54. We have examined whether the DBS providers carry any out-of-market signals based on the stations' significantly viewed status in any of the counties that comprise the DMA into which they are being imported. DIRECTV provided the Bureau with lists of the broadcast stations that they currently carry pursuant to their significantly viewed status and indicated the markets in which these stations are carried. The information can be found in Appendix B's List 1 attached hereto. DISH confirmed to the Bureau that it does not currently carry any broadcast stations pursuant to their significantly viewed status. Our analysis indicates that, of the twenty stations DIRECTV lists as being carried pursuant to their significantly viewed status, nine such stations are being imported into six orphan counties that are located in out-of-state DMAs.[149] In each instance the significantly viewed station is also licensed to a community in the same state as the county into which its signals is being imported.[150]

55. We also examined the information provided by DISH and DIRECTV, attached hereto in Appendix B – List 2, which identified the out-of-market stations that they carry pursuant to allowances based on filling in a missing network in short markets and pursuant to state-specific statutory copyright exceptions. In the short market data provided by DISH, none of the out-of-market stations are being imported into a short market where the counties from the same state as the out-of-market stations are

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[148] *See supra* note 73 and accompanying text.

[149] The counties are Cleburne County located in Alabama but assigned to the Atlanta, Georgia DMA; Mecklenburg and Patrick Counties located in Virginia but assigned to North Carolina DMAs; Sequoyah, Ottawa, and Le Flore Counties located in Oklahoma but assigned to Arkansas and Kansas DMAs. *See* Appendix B.

[150] WVTM and WBRC are licensed to Birmingham, Alabama and are being imported into Cleburne County, Alabama. WRIC, WDBJ, WSLS, and WSET are licensed to Virginia communities and are being imported into Mecklenburg and Patrick Counties, Virginia. KOTV, KJRH, and KTUL are licensed to Tulsa, Oklahoma and are being imported into Sequoyah, Ottawa, and Le Flore Counties in Oklahoma. *See* Appendix B.

orphan counties.[151] Analysis of the short market data from DIRECTV yielded three out-of-market stations that are being imported into two short markets that contain possible orphan counties. In particular, two stations licensed to Ohio communities are being imported by DIRECTV into the Parkersburg, West Virginia DMA, which has one Ohio county and two West Virginia counties. DIRECTV also imports a station licensed to a Kansas community into the short market of St. Joseph, Missouri, which has only one Kansas county and three Missouri counties.

56.   Appendix B – List 3 contains information on the stations that DISH carries pursuant to the specific statutory allowances in 17 U.S.C. Section 122(a)(4). DISH states that it carries an ABC affiliate licensed to Manchester, New Hampshire throughout the state of New Hampshire, which includes the counties of Gratton and Sullivan — assigned to the Burlington, Vermont-Plattsburgh, New York DMA — and the counties of Coos and Carroll — assigned to the Portland-Auburn, Maine DMA. DISH also states that it carries affiliates of the Big Four networks licensed to Burlington, Vermont in the Vermont counties of Bennington and Windham, which are assigned to the Albany, New York DMA and the Boston, Massachusetts DMA, respectively.

57.   Appendix B's List 3 also contains information on the stations carried by DIRECTV pursuant to the specific statutory allowances in 17 U.S.C. Section 122(a)(4). DIRECTV carries the ABC affiliate licensed to Manchester, New Hampshire throughout the state of New Hampshire, including the counties of Gratton, Sullivan, Coos, and Carroll, each of which is assigned to out-of-state DMAs. In addition, DIRECTV carries the affiliates of the Big Four networks licensed to Burlington, Vermont, and the PBS affiliate in the Vermont counties of Bennington and Windham. DIRECTV states that it carries three Big Four network affiliates and one noncommercial station licensed to Jackson, Mississippi in the Mississippi counties of Amite and Wilkinson, which are both assigned to the Baton Rouge, Louisiana DMA. Finally, Appendix B's List 4 details information DIRECTV provided on the PBS channels it carries pursuant to 17 U.S.C. Section 122(a)(4)(E). Utilizing this copyright exemption, DIRECTV provides PBS channels to subscribers that otherwise do not have access to an in-state, in-market PBS in a total of 28 states, effectively ensuring that consumers residing in these states have access to at least one in-state PBS station.

C.   Analysis of Access to Out-of-Market Stations Based on Viewership

58.   In order to provide a more complete analysis for Section 109(a)(1)(A), we reviewed Nielsen data to examine out-of-state stations that households are viewing in a market, whether via broadcast, cable, or satellite, and that meet Nielsen's minimum reporting requirements (*i.e.*, out-of-market stations that attract a minimum viewing audience). Specifically, we used Nielsen market data that identify broadcast television stations, multicast channels (which Nielsen calls subchannels), and cable networks viewed in each DMA.[152] The stations included in the Nielsen data, however, are only those stations that earned a specific cumulative rating, referred to as a "cume."[153] For local broadcast stations,

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[151] We identified three short markets that consist of counties from more than one state as potential DMAs where orphan counties may be present. However, in these short markets, the out-of-market station imported into these markets is licensed to a community from the same state as the counties that make up a majority of the DMA. The Parkersburg, West Virginia DMA, which receives a fill-in station from the Charleston, West Virginia DMA, consists of two West Virginia counties and one Ohio county. The St. Joseph, Missouri DMA, which receives two fill-in stations from the Kansas City, Missouri DMA, consists of three Missouri counties and one Kansas county. The Ottumwa, Iowa-Kirksville, Missouri DMA, which receives a fill-in station from the Kansas City, Missouri DMA, consists of five Missouri counties and four Iowa counties.

[152] Nielsen, *2015-2016 Local Reference Supplement: A Description of Methodology*, March 7, 2016.

[153] Four times a year (*i.e.*, February, May, July, and November, known as ratings "sweep" periods) Nielsen measures audiences for television stations assigned to all 210 DMAs and publishes this information in its Viewers in Profile

(continued….)

meaning stations whose community of license is located in the DMA for which viewership is being reported, the station must have a cume rating of at least 2.5 percent of unique households for a minimum of one quarter hour during Sunday through Saturday, 7:00 AM through 1:00 AM, to be included in this Nielsen data.[154] For stations being reported in a DMA other than the one in which their community of license is located, the station's cume rating must reach at least 9.5 percent of unique households in the reporting market. A similar cume rating is required for cable networks, regional cable networks, and local cable networks. We note that there may be other out-of-market signals available in a particular market; Nielsen's audience data will contain only those stations meeting Nielsen's established thresholds, and thus, may underrepresent the distant signals being viewed in a market.

59.   Attached at Appendix C is a table summarizing the stations identified as having been viewed outside of their assigned market during the relevant reporting period. The Appendix indicates the station's call sign, community and state of license, home DMA, and the DMA in which it was reported. Given that Nielsen aggregates viewership information for purposes of the market data we examined, we are unable to determine precisely by what means such out-of-market signals are being viewed or distributed in the particular market. However, we note that access to the out-of-market signal must be sufficiently robust to merit measurable viewership of the out-of-market station.

60.   Based on our analysis of Nielsen's viewership data, we have identified a number of instances in which viewership of a station was recorded in a market other than the market to which the station is assigned, or stated differently, instances in which Nielsen reported viewership of a out-of-market signal. Specifically, based on viewership data collected by Nielsen between October 29 and November 25, 2015, 38 of the 210 markets in the country contained at least one instance of a signal recorded in a market other than its market of origin.[155] In the majority of these cases, 25 markets, the data reflected viewership of one or two distant signals.[156] However, in six markets, typically smaller DMAs with fewer local, in-market signals, the data reflected viewership of five or six out-of-market signals.[157] In all, the data show 89 instances of a distant signal being viewed in a market, although some of these involve the same station being viewed in multiple markets. For example, WTTG-TV (Fox) licensed to Washington, DC appeared in the market viewing data for the Harrisonburg, VA DMA and the Baltimore, MD, DMA, in addition to its assigned DMA of Washington, DC. In all, 79 stations appeared in the Nielsen data as having been viewed outside their assigned market.[158]

61.   We have also examined whether any of these stations are considered to be significantly viewed in any of the counties that comprise the distant DMA in which Nielsen has recorded viewing of the station. By cross-referencing the Commission's significantly viewed list,[159] which records the counties in which a station is considered to be significantly viewed for purposes of the Commission's rules, with the counties that comprise the distant market in which the station has recorded viewing, we are

(Continued from previous page) ————————————

Reports. This is the source for the information provided by Nielsen. The data presented herein is for the month of November 2015.

[154] Nielsen, *2015-2016 Local Reference Supplement: A Description of Methodology*, March 7, 2016. This is only the minimum reporting requirement, so stations' ratings may not be reported in all sections.

[155] Nielsen, *Nielsen Station Index: Viewers in Profile* (multiple markets), November 2015. Commission staff analyzed Nielsen Station Index data for all 210 DMAs during the November 2015 reporting period.

[156] *Id.*

[157] *Id.*

[158] *Id.* In addition, we note that several Mexican television stations also appeared in the viewing data for particular markets, but we have not included such stations in our analysis.

[159] *See* Significantly Viewed List, at http://www.fcc.gov/mb/.

able to determine whether the station is considered significantly viewed in any of the counties of that DMA. In cases where such stations do appear on the significantly viewed list for such counties, we have included this information on Appendix C and indicated the specific counties. However, the fact that a station is considered to be significantly viewed in one or more counties of a market may not be indicative that the station is being carried pursuant to its status as a significantly viewed station.

D. Case Studies

62. In the *STELAR Report PN*, we sought comment on the appropriate methodologies and submission of essential data for the analysis with respect to cable and telephone MVPDs. The Bureau sought information on the best approach, and noted limitations with some available data, such as the Form 325 submissions. Recognizing a potential absence of comprehensive data for the purposes of the report, the Bureau proposed including case studies for specific counties where commenters have indicated a lack of local programming.[160] The Western Telecommunications Alliance – Advocates for Rural Broadband (WTA) states that many cable systems, including most if not all of WTA's members, are exempt from the Form 325 requirement because they serve fewer than 20,000 subscribers, and so the Bureau would not be able to collect data on such cable systems through their annual reports.[161] WTA points out that such cable services are the ones most negatively impacted by the current DMA assignment system.[162] WTA supports the case study approach.[163]

63. Several commenters in the record of this proceeding identified specific counties where households are either unable to receive any in-state programming or unable to receive sufficient in-state programming.[164] We have included in our examination many of the counties specifically identified by commenters to this proceeding. To ensure a sufficiently large and geographically diverse sample for analysis, we also independently identified and included other counties assigned to DMAs composed predominantly of counties from another state. Using a case study approach, the Bureau conducted detailed analysis of the extent to which households in these specific counties have access to out-of-market television stations via over the air reception, cable systems, and DBS operators, as detailed further below.[165] In all, our case studies examined 14 counties located in 11 DMAs. The full case studies are attached hereto at Appendix D.

64. Employing the database that we constructed to analyze the level of access to out-of-market signals received over the air, discussed above, we used the Longley-Rice methodology to determine the out-of-market broadcast stations available to consumers over the air in each county studied. Thus, each case study reports the number of out-of-market stations of all types, including, full power, low

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[160] *STELAR Report PN*, 30 FCC Rcd at 1906-7.

[161] WTA Comments at 4.

[162] *Id.*

[163] *Id.* No commenter objected to the use of case studies.

[164] Commenters name La Plata County, Colorado; Albany County, Wyoming; Stephens County, Georgia; Garrett County, Maryland; Bristol County, Massachusetts; and Fulton County, Pennsylvania, as counties of concern. *See, e.g.*, Spencer Karter Comments (March 6, 2015); Timothy Brastow Comments (March 24, 2015); Kyle Ramie Comments (May 6, 2015); Pam Mathewson Comments (May 11, 2015); Bridget Hettgar Comments (May 13, 2015); Richard Bolt Comments (May 13, 2015); Celeste Colgan Comments (May 15, 2015); Peter Lang Comments (May 26, 2015); Tami Sorenson Comments (May 26, 2015); Linda Valenti Comments (May 28, 2015); Tammy Au-France Comments (June 4, 2015); Kenneth Allison Comments (June 5, 2015); Dean and Linda Lebeda Comments (June 8, 2015); Joe Remick Comments (June 9, 2015); Julius and Erica Muschaweck Comments (June 10, 2015); Lee Ann Stephenson Comments (June 11, 2015); Governor Matthew Mead Comments (June 11, 2015).

[165] *See* Appendix D.

power, Class A low power, and TV translators, both commercial and noncommercial, available to the populations of the respective counties examined.[166] Each case study also indicates whether the out-of-market broadcast stations available are contained on the Commission's list of significantly viewed stations for the particular county.[167] All of the stations listed in the case studies are identified by their station call sign, community and state of license, DMA to which they are assigned, and network affiliation, if any.

65. To describe consumers' access to out-of-market broadcast stations from cable systems, we identified the cable systems operating in the counties (or communities within those counties) in each study using the Commission's Cable Operations and Licensing System (COALS).[168] Where available, we used cable operators' 2015 FCC Form 325 submissions to determine the carriage of out-of-market broadcast stations. Where cable systems in the areas included in the case studies are not included in the 2015 FCC Form 325 sample because of their small size, we used Warren Television & Cable Factbook data and individual cable system websites to gather additional information.[169] In addition, in some counties multiple cable systems offer varying broadcast station lineups.[170] Rather than report on each cable system where this is the case, to get an understanding of whether out-of-market broadcast stations are being carried, we reviewed the available information and present an overview of the out-of-market stations that cable systems carry.

66. With respect to DBS carriage of out-of-market broadcast stations in each county, we utilized the data collected regarding the out-of-market signals carried by either DIRECTV or DISH, as discussed above.[171] Drawing on this information, each case study identifies the out-of-market broadcast stations, if any, provided as part of each DBS operator's carriage of significantly viewed, short market fill-in, and statutory copyright exempted stations.[172] In such cases, we have assumed that such out-of-

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[166] Some low power and Class A broadcast stations originate in-state broadcast programming, and translators extend the geographic reach of broadcast programming; thus, estimates based only on full power broadcast stations may understate the extent to which in-state broadcast programming is available over the air. Conversely, some low power television stations, Class A stations, and translators may carry programming that originates from out-of-state broadcast stations; and, therefore, estimates that include all broadcast stations may overstate the extent to which in-state broadcast programming is available over the air.

[167] *See* Significantly Viewed List, at http://www.fcc.gov/mb/. As described above, significantly viewed stations are available for carriage by cable and DBS operators and are treated as local stations for copyright purposes. Cable and DBS operators must obtain retransmission consent prior to carrying out-of-market significantly viewed stations. Furthermore, we note that cable or DBS MVPD carriage of a station listed as significantly viewed does not necessarily indicate that the station is being carried by the MVPD pursuant to the significantly viewed rules.

[168] The Commission's COALS database can be located at http://fjallfoss.fcc.gov/coals7.

[169] Warren Communications News, Television & Cable Factbook Online, http://www.tvcablefactbook.com (Warren Factbook). We were not able to locate complete information from publicly available sources for every cable system listed in COALS that was not in the 2010 FCC Form 325 sample. The data are not sufficient to allow us to determine the extent to which cable is available to specific households in any particular county or community; thus, the presence of a cable system does not necessarily mean that all households have access to the out-of-market stations offered by the included cable systems.

[170] The data sources list call signs for the stations carried by individual cable systems. Unless otherwise noted, the data do not allow us to determine if a cable system carries the entire programming schedule of the station or only the local programming (*i.e.*, non-network, non-syndicated programming) of a station.

[171] *See supra* para. 53.

[172] The sources for information about broadcast stations' communities of license and affiliations are Nielsen, BIA/Kelsey, DISH, DIRECTV, and individual broadcast stations' websites.

market signals carried by the DBS providers are generally available throughout the market, including in the particular county being examined.

67.   In discussing our findings from the case studies, we provide the number of out-of-market stations that each county receives and also identify the stations that appear on the Commission's significantly viewed list for the particular county, and thus could be carried by MVPDs pursuant to that status in those particular counties. Further, we examined whether any of the stations appearing on the significantly viewed list in the case studies are carried pursuant to the significantly viewed rules, but based on the information provided by DIRECTV and DISH, there are no stations being carried by DBS MVPDs pursuant to the significantly viewed rules in the counties selected for the case studies. Also, none of the counties in the case studies are located in a short market where one of the four major television networks is not offered on the primary stream of a local broadcast station. In the case of cable or telephone MVPDs, we are unable to determine whether the station is being carried pursuant to the significantly viewed rules based on the current data available to us. In addition, we highlight the stations licensed to communities in the same state as the county examined, including stations located in the same market, to evaluate the availability of local programming as we interpret local programming to include in-state programming consistent with Congress's intent.[173]

68.   We have also examined and reported on any in-market stations that are licensed to the same state as the county at issue. For cable systems, we utilized the same methodology to describe consumers' access to in-market stations as we did for access to out-of-market broadcast stations. For DBS operators, we searched the channel lineups on the websites of DIRECTV and DISH for the local channels they carry in the case study counties. Even though such stations are in-market – and thus not relevant to the question of what out-of-market stations are available to the county – to the extent that they are licensed to the same state as the county being examined, these in-market and in-state stations potentially provide relevant local programming to the county, despite the fact that the county is located in a state different from the core of the DMA.[174] Where relevant, we note the stations that are affiliated with the Big Four networks and/or PBS, as well as the population served by these stations relative to the county population. Finally, we identify some of the stations that appear to carry local programming relevant to the counties and the states in which they are located.[175]

69.   *La Plata County and Montezuma County, Colorado*. The counties of La Plata and Montezuma are located in Colorado but assigned to the Albuquerque-Santa Fe, New Mexico DMA, which consists primarily of twenty-eight counties in New Mexico but also a portion of an Arizona county, in addition to the two Colorado counties. While La Plata County does not receive any out-of-market stations directly over the air or any out-of-market stations considered to be significantly viewed, the cable MVPD serving the county does carry an out-of-market NBC affiliate from the Denver, Colorado DMA. DBS MVPDs in La Plata County do not carry out-of-market stations. Notably, there are television stations assigned to the Albuquerque-Santa Fe DMA that are licensed to communities in Colorado. These Colorado stations are in-state as to La Plata and Montezuma counties, and some appear to provide Colorado programming.[176] We note that many such in-market, in-state stations are translators and

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[173] *See Senate Commerce Committee Report* at 15.

[174] We find that this consideration is relevant as it allows us to evaluate the extent to which consumers in those counties receive in-state programming.

[175] We note that our ability to evaluate programming is limited by the amount of programming information available for each station. Thus the programming we describe is not meant to be exhaustive for each county.

[176] KRMU airs *Rocky Mountain PBS* on all three of its multicast channels and provides news and information to La Plata County and Colorado. An additional seven in-market stations retransmit signals from broadcast stations licensed to Colorado communities.

although most are retransmitting signals from the Albuquerque-Santa Fe DMA, seven translators bring in stations licensed to Colorado communities to La Plata County.[177] In addition, a PBS affiliate, KRMU, licensed to Durango, Colorado, which is carried by cable, provides Colorado news and local programming to La Plata County.

70. Montezuma County receives five out-of-market stations over the air, all of which are translators rebroadcasting stations from the Denver, Colorado DMA. None of these stations are listed as significantly viewed, and each serves a very small percentage of the county's population. None of these stations are carried by cable or DBS MVPDs in Montezuma County. In addition, the county receives 23 in-market stations, which are translators that retransmit stations licensed to Colorado communities. Of these translators, five stations serve substantial portions of Montezuma County, and two are affiliated with Big Four networks.[178] DBS operators in Montezuma do not carry stations licensed to Colorado communities. However, the cable MVPD serving the county carries a PBS affiliate, KRMU of Durango, Colorado, which provides Colorado news and local programming to Montezuma County.

71. *Albany County and Campbell County, Wyoming*. The counties of Albany and Campbell are located in Wyoming but are assigned to the Denver, Colorado DMA, which consists of forty-eight Colorado counties, fourteen Nebraska counties, and six Wyoming counties. Albany County receives eight out-of-market stations over the air, one of which is listed as a significantly viewed station.[179] Of these, five stations are licensed to communities in Wyoming, and two are affiliated with Big Four networks and serve a large percentage of the county.[180] DBS operators do not carry out-of-market stations. The cable MVPD serving Albany County carries the significantly viewed station KGWN of Cheyenne, Wyoming and three additional out-of-market stations licensed to Wyoming communities.[181] Also, Albany County receives two in-market, in-state stations over the air, although neither is carried by MVPDs in the county. One of these stations, a PBS affiliate, as well as the significantly viewed station KGWN and two out-of-market stations carried by cable, appear to provide local news and information relevant to Wyoming communities.

72. Campbell County receives two out-of-market stations over the air, both of which are licensed to Wyoming communities. Each serves a very small percentage of the county's population, and none of the stations are deemed significantly viewed. As in Albany County, DBS operators do not carry out-of-market stations. The cable MVPD carries the same three additional out-of-market stations licensed to Wyoming communities as in Albany County. Campbell County does not receive any in-market, in-state stations either over the air or via MVPD carriage. KGWN, as well as two of the out-of-market stations carried by cable, and one of the out-of-market stations received over the air each provide local and Wyoming state programming to Campbell County.

73. *Stephens County, Georgia*. Assigned to the Greenville-Spartanburg-Anderson, South Carolina-Ashville, North Carolina DMA, Stephens County is one of four Georgia counties that form the DMA along with fourteen North Carolina counties and ten South Carolina counties. Stephens County

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[177] However, we note that the percentage of the county reached by these stations is quite low.

[178] K24CH (NBC), K28EB (CBS), K30HJ (PBS), K22CU (CW), and K26CI (MyNetworkTV) all serve at least 90 percent of Montezuma County and retransmit the programming of stations licensed to Colorado communities.

[179] The significantly viewed station, KGWN, is a CBS/NBC/CW affiliate and serves two percent of the county over the air. KGWN is carried by cable and DBS MVPDs in Albany County. However, the DBS operators are not carrying KGWN pursuant to its significantly viewed status.

[180] K19FX (CBS) and KXJB-LP (NBC) are licensed to the Wyoming communities of Cheyenne and Laramie respectively, and serve 96 percent and 93 percent of Albany County respectively.

[181] The additional stations are KTWO (ABC), KCWY (NBC), and KCWC (PBS).

receives two out-of-market signals over the air, one of which is from a station in the Atlanta, Georgia DMA. DBS operators do not carry out-of-market stations, but the cable MVPD serving Stephens County carries four out-of-market stations including three Big Four network affiliates and a PBS affiliate from the Atlanta, Georgia DMA. Stephens County does not receive any significantly viewed stations. The county receives two in-market stations that are licensed to Georgia communities, but no MVPD carries any in-market, in-state stations. The four out-of-market stations carried by the cable MVPD provide news and local programming from Atlanta, Georgia to Stephens County.

74. *Hunterdon County, New Jersey*. Hunterdon County is located in New Jersey but is assigned to the New York, New York DMA, which consists of fifteen New York counties, fourteen New Jersey counties, and one Pennsylvania county. Hunterdon County receives twenty-five out-of-market stations over the air, six of which are licensed to communities in New Jersey. There are five significantly viewed stations in the county, but none of the stations are licensed to New Jersey communities. DBS operators do not carry any out-of-market stations in Hunterdon County, and the cable MVPD serving the county carries nine out-of-market stations from the Philadelphia, Pennsylvania DMA, but does not carry out-of-market stations from New Jersey. In addition, nine in-market stations are licensed to New Jersey communities and can be received over the air. Among these stations are multiple PBS affiliates and a FOX affiliate that serve an extensive portion of the county.[182] DBS operators also carry nine in-market, in-state stations, including the FOX and PBS affiliates. As among the in-market, in-state stations, the cable service carries only the FOX affiliate and a Univision station. The FOX and PBS affiliates provide news and local programming that include New Jersey as an area of focus.

75. *Garrett County, Maryland*. Garrett County is located in Maryland and is assigned to the Pittsburgh, Pennsylvania DMA, which also includes thirteen Pennsylvania counties and two West Virginia counties. Garrett County receives twelve out-of-market stations over the air, three of which are licensed to communities in Maryland. DBS operators do not carry out-of-market stations in Garrett County, but the cable MVPD serving the county carries three out-of-market stations — one licensed to a community in West Virginia and two in Pennsylvania. There are two significantly viewed stations in the county, but neither is licensed to a Maryland community. Only one in-market, in-state station can be received over the air. While not carried by DBS, this PBS affiliate is carried by both cable MVPDs serving Garrett County. This station and the two out-of-market stations available over the air provide local news and public affairs programming about Maryland in Garrett County.

76. *Bristol County, Massachusetts*. Bristol County is the only Massachusetts county along with five Rhode Island counties that form the Providence, Rhode Island DMA. Bristol County receives over the air eighteen out-of-market stations, seventeen of which are licensed to Massachusetts communities, including all Big Four network affiliates and two PBS stations from the Boston, Massachusetts DMA. DBS operators do not carry out-of-market stations, but the cable and telephone MVPDs serving the county together carry eleven out-of-market stations, including the aforementioned Big Four network affiliates and two PBS stations. Five significantly viewed stations, all originating from the Boston DMA, are listed for Bristol County and all are carried by the cable and telephone MVPDs.[183] There are two in-market stations licensed to Massachusetts communities. They are available over the air and are carried by all MVPDs serving the county. The out-of-market Big Four network affiliates, PBS stations, significantly viewed stations, and in-market ABC affiliate each provide Bristol County with Massachusetts programming from the Boston and New Bedford areas.

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[182] WWOR-TV (FOX/MyNetworkTV) serves 73 percent of Hunterdon County, and one of the PBS affiliates, WNJB, serves 95 percent of the county.

[183] We note that the MVPDs may not necessarily be carrying these stations pursuant to the significantly viewed rules.

77.   *Sheridan County, Wyoming*. Assigned to the Rapid City, South Dakota DMA, Sheridan County is the only Wyoming county in the DMA, which also consists of thirteen South Dakota counties, one Montana county, and one Nebraska county. Sheridan County does not receive any out-of-market stations over the air. DBS operators do not carry any out of market signals in the county, but the cable MVPD serving Sheridan County carries four out-of-market stations, two of which are licensed to Wyoming communities and one of which is the only significantly viewed Wyoming station listed for the county. Three in-market stations licensed to Wyoming communities are available over the air, including two translators, which retransmit the signals of the two out-of-market stations carried by the cable MVPD. DBS operators serving Sheridan County do not carry any Wyoming stations, but the cable MVPD carries two in-market stations licensed to communities in Wyoming. The two out-of-market stations carried by the cable MVPD both provide Sheridan County with Wyoming daily news and public affairs programming.[184]

78.   *Sussex County, Delaware*. Sussex County is the only Delaware county assigned to the Salisbury, Maryland DMA, which also contains four Maryland counties. Sussex County receives four out-of-market stations over the air, two of which are licensed to Delaware communities. DBS operators do not carry out-of-market stations in Sussex County. Cable MVPDs carry two out-of-market stations, but none of the stations are from Delaware. There are four significantly viewed stations listed for Sussex County, but none of the stations are from Delaware. A PBS affiliate and a low power NBC affiliate are the only in-state, in-market stations that can be received over the air. DBS operators carry the two in-market Delaware stations, and both cable MVPDs serving Sussex County carry the two in-market stations plus an additional low power station. The PBS and NBC affiliates provide Sussex County with local news and community programming about the state of Delaware.

79.   *Elko County, Nevada*. Elko County is located in Nevada and is assigned to the Salt Lake City, Utah DMA, which also includes twenty-nine Utah counties, three Idaho counties, and two other Nevada counties. Elko County does not receive any out-of-market stations over the air. DBS operators do not carry out-of-market stations from Nevada, but the cable MVPD serving the county carries three out-of-market stations from the Reno, Nevada DMA, including the one significantly viewed station located in Nevada and listed for Elko County. There are two other significantly viewed stations listed for the county located in the Boise, Idaho DMA. Elko County receives 36 in-market, in-state stations, but only 21 are either licensed to, or are translators of stations licensed to, Nevada communities. Many of these stations are Big Four or PBS affiliates and serve large percentages of the county.[185] Neither DBS nor cable MVPDs carry any in-market Nevada stations. The in-market NBC affiliate licensed to Elko, Nevada airs news and political programming about Nevada in Elko County.

80.   *Fulton County, Pennsylvania, and Grant County, West Virginia*. The Washington, D.C.-Hagerstown, Maryland DMA consists of twenty-three Virginia counties, eight Maryland counties, seven West Virginia counties, one Pennsylvania county, and the District of Columbia. Fulton County, Pennsylvania receives eight out-of-market stations licensed to Pennsylvania communities, including Big Four network affiliates and PBS affiliates. Although only one station serves a little more than half of the county, two stations are listed as significantly viewed for Fulton County. No MVPD carries out-of-market stations in Fulton County. The county does not receive any in-market Pennsylvania stations over the air or via MVPD carriage. The two significantly viewed stations provide news and public information programming about Pennsylvania to Fulton County.

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[184] KTWO-TV (ABC) and KCWC (PBS) are also the originating stations of the two translators available over the air in Sheridan County, which serve 96 percent and 89 percent of the county respectively.

[185] KENV-TV (NBC) serves 82 percent of Elko County. K36HA (CBS), K15EE (PBS), and K08LS (ABC) are translators that retransmit signals from Reno, Nevada and serve respective percentages of 73, 73, and 51 in Elko County.

81. Grant County receives seven out-of-market stations over the air, three of which are from West Virginia. Three of these stations are carried by the cable MVPD serving the county, but DBS MVPDs do not carry out-of-market stations in Grant County. Two significantly viewed stations licensed to West Virginia are listed for Grant County. There are six in-market stations that also are licensed to West Virginia communities, or are translators for West Virginian stations, available over the air in Grant County. None of these in-market, in-state stations are carried by MVPDs serving Grant County. The out-of-market stations from West Virginia, two of which are carried by cable, provide West Virginia local programming including news and political programming.

82. *Umatilla County, Oregon*. Umatilla County is the only Oregon county assigned to the Yakima-Pasco-Richland-Kennewick DMA, which also consists of five Washington counties. Umatilla County receives two out-of-market stations over the air from the Portland, Oregon DMA. One of these stations, a PBS affiliate, is also carried by the cable MVPD serving the county along with two other Portland stations, which are Big Four network affiliates. DBS operators in Umatilla County do not carry Oregon stations. There are no significantly viewed stations listed for the county. Umatilla County receives 16 in-market, in-state stations, of which 13 are licensed to Washington communities or are translators of such stations. DBS and cable MVPDs in Umatilla County do not carry in-market Oregon stations.[186] The out-of-market PBS station carried by the cable operator airs local news and Oregon state programming.

83. *Summary of Case Study Findings*. As Table 3 below illustrates, the case studies indicate that each county examined receives the signals of at least one out-of-market station either over the air or through an MVPD. In counties where there are only a few available out-of-market stations, we find that there are also in-market stations located in the same state as the county examined that provide local programming, including in-state programming, as illustrated below by Table 4. Generally, more stations are available over the air than through MVPDs, although this trend varies across the counties examined in the case studies. Also, in the counties examined, we find that cable MVPDs generally are more likely to carry out-of-market stations than DBS operators.

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[186] DIRECTV and Charter carry KFFX-TV (FOX), which while located in Pendleton, Oregon, is actually a satellite station of KCYU-LD (FOX), located in Yakima, Washington.

Table 3

Number of Out-of-Market Stations Available to Case Study Counties[187]

County, State	Over the Air	DBS	Cable	On Significantly Viewed List	In-State Programming[188]
La Plata, Colorado	0	0	1(1)	0	0
Montezuma, Colorado	5(5)	0	0	0	0
Albany, Wyoming	8(5)	0	3(3)	4(1)	3
Campbell, Wyoming	2(2)	0	3(3)	2(2)	4
Stephens, Georgia	2(1)	0	4(4)	0	4
Hunterdon, New Jersey	25(6)	0	9(0)	5(0)	2
Garrett, Maryland	12(3)	0	3(0)	2(0)	2
Bristol, Massachusetts	18(17)	0	11(11)	5(5)	8
Sheridan, Wyoming	0	0	4(2)	3(1)	2
Sussex, Delaware	4(2)	0	2(0)	4(0)	0
Elko, Nevada	0	0	3(3)	3(1)	0
Fulton, Pennsylvania	8(8)	0	0	2(2)	3
Grant, West Virginia	7(3)	0	3(2)	2(0)	3
Umatilla, Oregon	2(2)	0	3(3)	0	1

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[187] Parentheses indicate the number of out-of-market stations that are also in-state (i.e. licensed to a community in the same state as the county listed).

[188] Based on review of publically available sources, Bureau staff noted the number of stations located in the same state as the county that carry local news or public affairs programming. We note that our ability to evaluate programming is limited by the amount of programming information available for each station and that the number is not meant to be precise.

Table 4

Number of In-Market, In-State Stations Available to Case Study Counties[189]

County, State	Over the Air	DBS	Cable	In-State Programming
La Plata, Colorado	10	0	1	1
Montezuma, Colorado	23	0	1	1
Albany, Wyoming	2	0	0	1
Campbell, Wyoming	0	0	0	0
Stephens, Georgia	2	0	0	0
Hunterdon, New Jersey	9	9	2	3
Garrett, Maryland	1	0	1	1
Bristol, Massachusetts	2	2	2	1
Sheridan, Wyoming	3	0	2	0
Sussex, Delaware	2	2	3	2
Elko, Nevada	21	0	0	1
Fulton, Pennsylvania	0	0	0	0
Grant, West Virginia	6	0	0	0
Umatilla, Oregon	13	0	0	0

84.   Based on our findings, we note that the availability of stations via MVPD carriage in the case study counties may depend on factors such as proximity to major metropolitan areas. For example, Table 3 indicates that MVPDs located in urban counties, such as Hunterdon County and Bristol County, seem more likely to carry an abundance of in-state but out-of-market stations. In rural counties, the presence of numerous translator stations, retransmitting both in-market and out-of-market signals, seems to indicate an interest by the stations located in metropolitan areas to serve the more distant counties, regardless of whether they are located in a different state than the core of the DMA. Notably, our review of the programming provided by stations in the relevant counties shows that, where Table 3 indicates an absence of out-of-market stations providing in-state programming, Table 4 shows that there is an in-state station providing in-state programming.[190] Therefore, consistent with our previous findings in the *In-State Programming Report*, we continue to find that there is at least one station providing local programming, including in-state news and public affairs programming, in every county examined by the case studies.[191]

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[189] These numbers exclude stations that are translators for stations that originate from out-of-state. Translator stations were identified using a list of TV translators available via the Media Bureau's website. *See* Low Power Television (LPTV), https://www.fcc.gov/media/television/low-power-television-lptv (last visited May 3, 2016).

[190] In the counties of La Plata, Montezuma, Sussex, and Elko, the last column of Table 3 indicates that there are no out-of-market stations with programming about the state in which those counties are located. However, the last column of Table 4 indicates that there is at least one in-market, in-state station that provides local programming to each of those counties.

[191] *See In-State Programming Report*, 26 FCC Rcd at 11933-34, paras. 25-26.

IV. SECTION 109(a)(1)(B), (a)(2), AND (b): DMA ALTERNATIVES AND RECOMMENDATIONS FOR FOSTERING INCREASED LOCALISM

85.   Sections 109(a)(1)(B), (a)(2), and (b) instruct the Commission to analyze alternatives to the use of DMAs in defining television markets and to discuss recommendations on how to foster increased localism in counties located in a state different from the state or states that predominantly make up the DMA, taking into account a number of factors.

A. Alternatives to the Use of Designated Market Areas

86.   Section 109(a)(1)(B) requires the Commission to analyze "whether there are technologically and economically feasible alternatives to the use of designated market areas to define markets that would provide consumers with more programming options and the potential impact such alternatives could have on localism and on broadcast television locally, regionally, and nationally."[192] Based on our analysis and the comments received in this proceeding, it appears that few if any technologically and economically feasible alternatives exist to the use of Nielsen DMAs for market determination.

87.   As discussed in the 2011 *In-State Programming Report*, our previous findings demonstrate that the percentage of counties that currently lack the ability to receive any in-state programing is small.[193] In the *In-State Programming Report*, the Bureau extensively examined consumers' access to signals from both in-state and out-of-state television stations. The Bureau's detailed analysis found that the vast majority of households and consumers have access to programming from in-state stations, with 99.98 percent of the 117.2 million total U.S. households registering access to in-state programming from at least one in-state station, either over the air or via an MVPD.[194] The analysis showed further that about 99.2 percent of all U.S. households can receive at least one in-state station via over the air reception, and about 98.4 percent of households have access to at least one in-state station via DBS.[195]

88.   The current record indicates that departing from the existing Nielsen DMA market determination system would create enormous disruptions in the video programming industry disproportionate to any benefit gained, and would be unlikely to increase the amount of local programming available to viewers as a whole. Furthermore, changing the market of a particular county from one DMA to another that is potentially composed of counties from the same state as the county may not necessarily increase the amount of local programming that the county receives due to the economics of broadcast television and the ability (or inability) to serve a geographically distant, but in-state county.

89.   In the *STELAR Report PN*, the Commission requested suggestions on alternatives to the use of DMAs to define market areas. Small, rural MVPDs represented by WTA and the Independent Telephone & Telecommunications Alliance (ITTA) were the only commenters to suggest that the Commission consider DMA alternatives.[196] Specifically, WTA and ITTA state that the Commission should consider alternatives that would enable cable providers and consumers to choose which broadcast stations they wish to receive.[197]

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[192] STELAR, § 109(a)(1)(B), 128 Stat. 2065.

[193] *In-State Programming Report*, 26 FCC Rcd at 11933-34, paras. 25-26.

[194] *Id.*

[195] *Id.* at 11934, para. 28.

[196] WTA Comments at 13; Independent Telephone & Telecommunications Alliance (ITTA) Reply at 3-5.

[197] WTA Comments at 13; ITTA Reply at 3-5.

90. WTA proposes that cable operators, on behalf of their customers, should have the ability to change the DMA assignment of the community in which their customers reside to a DMA in the same state as the customers' community that reflects what the cable operator determines to be the interests of the majority of the customers in that community.[198] Under this system, the affected broadcast stations would then have the burden of rebutting the presumption that such a change in DMA assignment is reasonable and appropriate.[199] WTA argues that such a presumption would aid smaller cable operators for whom the market modification process is too costly or inefficient.[200] WTA states that the impact of such a change on broadcast viewership and advertising revenue would be minimal because "the typical subscribership of cable operators and the size of rural communities impacted by illogical DMA assignments is generally a very small proportion of the larger DMA."[201] WTA states that any negative impact on broadcasters would be outweighed by consumer benefits of greater choice and access to more relevant and timely local programming.[202]

91. Alternatively, WTA states that consumers should be able to select the broadcast channels provided by their cable operators on an "a la carte" basis.[203] WTA states that an "a la carte" regime would give consumers the most options in choosing which DMA is the best for their local programming needs and ultimately for which broadcast stations they wish to pay.[204] ITTA suggests an approach similar to the Senate Commerce Committee's August 2014 Local CHOICE proposal.[205] Under ITTA's proposal, local commercial stations annually would opt for must carry or retransmission consent status in exchange for payment at a uniform per subscriber fee that applies to all MVPDs in a market.[206] Consumers would then select which stations they want to purchase and the MVPD would collect and remit those fees to the relevant broadcaster.[207] ITTA asserts that this proposal would give consumers the choice of whether or not to receive and pay for local broadcast stations based on their individual preferences.[208]

92. Commenters opposed to DMA alternatives argue that changing the existing DMA system would create disruptions in the television programming and advertising markets disproportionate to any benefit gained.[209] DIRECTV adds that adopting a market determination system different from the Nielsen DMA system is infeasible, particularly for DBS providers.[210] DIRECTV states that the spot beams used to carry local television stations have been configured using the Nielsen DMA system.[211] DIRECTV

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[198] WTA Comments at 3, 9-11.

[199] *Id.* at 3.

[200] *Id.*

[201] *Id.*

[202] *Id.*

[203] *Id.*

[204] *Id.* at 3-4.

[205] ITTA Reply at 4.

[206] *Id.*

[207] *Id.*

[208] *Id.*

[209] NAB Comments at 4, 23; Joint Television Network Affiliates (JTNA) Reply at 2, 15.

[210] DIRECTV, LLC (DIRECTV) Comments at 1.

[211] *Id.* at 2. Spot beam coverage is fixed on the satellites DIRECTV uses to provide local-into-local service. *Id.* at 2-3.

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states that, while some of its satellites can adjust spot beams, doing so would disrupt service across several markets and negate DIRECTV's efforts to optimize population coverage.[212] DIRECTV explains that it cannot move individual spot beams on its satellites and can only adjust slightly the entire array of spot beams on a satellite.[213] DIRECTV states that changing satellites to comply with DMA alternatives would render its existing satellites, representing billions of dollars, essentially useless and impose significant additional costs as well as substantial consumer disruption.[214]

93.   NAB states that Nielsen DMAs reflect population and economic realities and are essential to an efficient marketplace for television stations.[215] NAB adds that major changes to the existing DMA structure may be technically impractical or infeasible for broadcasters and MVPDs.[216] NAB points out that the physical limitations of broadcast signals (tower placement, signal propagation, topography) prevent stations from aligning coverage areas with state boundaries.[217] Cable headends and satellite uplink facilities could have trouble receiving a quality signal from newly aligned in-state stations.[218] Instead of adopting DMA alternatives, broadcast commenters state that existing law and Commission regulations suffice to address localism concerns.[219] NAB and the Joint Television Network Affiliates (JTNA) argue that the alternatives supported by WTA and ITTA amount to thinly veiled attempts to give MVPDs more leverage in retransmission consent negotiations.[220]

94.   Commenters advocating for DMA alternatives generally stress the shortcomings of the current market determination system in serving rural markets.[221] However, NAB attributes the challenges broadcast television stations face in providing local services in rural markets to the "fundamental economics of television broadcasting," not market definitions.[222] NAB explains that television stations need large economic bases drawn from large populations to remain viable, which is why television stations are concentrated in large population centers.[223] Rural markets have smaller populations, which means smaller sources for potential revenue and thus fewer resources to produce local programming.[224] NAB argues that changing the market definitions would not alter this economic reality and thus would not result in greater localism or programming options for such areas.[225]

95.   Given the record developed in this proceeding, as well as the record and analysis developed in the Commission's earlier *In-State Programming Report*, it does not appear that an economically and technically feasible alternative exists to the use of DMAs to define television market

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[212] *Id.* at 2-3.

[213] *Id.* at 2-3 & n.7.

[214] *Id.* at 3.

[215] NAB Comments at 8-12.

[216] *Id.* at 25.

[217] *Id.* at 25.

[218] *Id.* at 25.

[219] *Id.* at 13-14; JTNA Reply at 10-15.

[220] NAB Reply at 6-8; JTNA Reply at 17-18.

[221] WTA Comments at 2; ITTA reply at 1-2.

[222] NAB Comments at 26.

[223] *Id.* at 26.

[224] *Id.* at 27.

[225] *Id.* at 27.

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areas. For the most part, DMAs place each county into one and only one DMA.[226] Our analysis confirms that the vast majority of households receive signals from in-state television stations, regardless of the DMA to which the county is assigned. For particular counties, the DMA assignment may result in viewers receiving limited programming about the state in which the county is located. Based on our analysis of the record, the existence of such counties may have less to do with the fact that DMAs cross state lines and more to do with broadcast television economics and the incentives broadcast stations have to reach large populations.[227] We agree with NAB's comments that changing the market definitions by adopting a DMA alternative would not alter this reality, nor necessarily result in such counties receiving more programming about their state.[228]

96. Notably, no commenter to this proceeding has proposed that the current DMA system should be abandoned entirely. Even the proposals by WTA and ITTA would rely on retaining Nielsen's market delineations.[229] Furthermore, we agree with commenters that Nielsen's DMA market determination system remains the industry standard and replacing it would unduly disrupt the video programming industry and consumers.[230] We are unable to identify any technologically or economically feasible alternative market determination system at this time. Instead, as discussed in the following section, we note that mechanisms that work from the current DMA system to make targeted adjustments may potentially provide consumers with more local programming relevant to the counties and states in which they reside.

B. Recommendations for Fostering Increased Localism

97. Sections 109(a)(2) and (b) of the STELAR require the Commission to discuss recommendations on ways to foster increased localism in counties served by broadcast stations licensed to out-of-state DMAs. In making recommendations, the Commission is instructed by Section 109(b) to consider: (1) the impact that DMAs that cross state lines have on access to local programming; (2) the impact that DMAs have on local programming in rural areas; and (3) the state of local programming in states served exclusively by out-of-state DMAs.

98. In the *STELAR Report PN*, the Commission sought comment and recommendations about ways to potentially increase television programming from and about the DMA and television programming from and about the state in which a consumer resides. The Commission asked commenters to address the three considerations identified in Section 109(b). In response, commenters generally referred to existing Commission regulations and procedures, which commenters suggest could be adjusted or maintained to foster increased localism.[231]

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[226] Some counties are split with part of the county in one DMA and part of the county in another DMA. Also, the Commission may consider a county as part of more than one local market in certain situations such as where the local television market of a broadcast station has been modified by a market modification petition or in the case of a "switched" county (*i.e.*, one that Nielsen has moved to another DMA). *See* 47 U.S.C. §§ 338(*l*)(2)(A), 534(h)(1)(C)(i). *See also* 47 CFR § 76.66(e)(3) ("…a county deleted from a market by Nielsen need not be subtracted from a market in which a satellite carrier provides local-into-local service, if that county is assigned to that market in the 1999-2000 Nielsen Station Index Directory or any subsequent issue of that publication.").

[227] *See* NAB Comments at 26-27.

[228] *See Id.* at 27.

[229] *See* WTA Comments at 13; ITTA Reply at 3-5.

[230] *See* NAB Comments at 25; DIRECTV Comments at 3.

[231] In addition to the recommendations discussed by the commenters, we note that other incremental adjustments to the Commission's rules and to copyright laws could potentially assist in fostering increased localism. In the *In-State Programming Report*, we discussed a proposal to expand the license for DBS carriage of local television stations.

(continued….)

99. We note that, to the extent that fostering localism contemplates facilitating access to in-state television signals, an overwhelming majority of consumers in the United States already have access to in-state signals as shown in our prior analysis.[232] As noted above, the data from the *In-State Programming Report* shows that 99.98 percent of U.S. households have over the air or MVPD access to in-state programming from at least one in-state station.[233] Using Nielsen data to examine in-state stations that households are watching, whether via cable, DBS, or over the air, the Commission found that about 99.4 percent of U.S. television households watch at least one in-state station.[234] Furthermore, roughly 98.4 percent of U.S. households are able to receive at least one in-state broadcast station through DBS operators.[235]

100. In addition, despite the fact that New Jersey and Delaware, respectively, are part of DMAs (New York, NY; Philadelphia, PA; and Salisbury, MD) containing large portions of adjacent states, consumers in New Jersey and Delaware have access to a number of in-state, in-market broadcast stations. Specifically, the New York DMA contains eight full power station licensed to New Jersey. The Philadelphia, PA DMA contains eight full power station licensed to New Jersey and two full power stations licensed to Delaware. The Salisbury, MD DMA contains two low power stations licensed to Delaware.[236] Thus, despite the fact that the DMAs covering these respective states are composed predominately of counties from neighboring states, consumers in New Jersey and Delaware continue to receive programming from in-market, in-state stations.[237]

101. The *In-State Programming Report* also estimated the extent to which households receive only out-of-state broadcast stations. The Commission found that, in all 50 states and the District of Columbia, households receiving only out-of-state stations represent an exceedingly small percentage of the population.[238] The highest percentage of households that receive no in-state programming was 3.5 percent and occurred in only two states, Wyoming and New Hampshire.[239] The highest number of households that receive only out-of-state stations was found in Minnesota but accounted for only about 2

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See In-State Programming Report, 26 FCC Rcd at 11951, paras. 60-61 (discussing the adoption of a statewide copyright license that would permit satellite carriers to retransmit in-state broadcast stations to residents of orphan counties without triggering carriage requirements beyond the current DMA-based scope of Section 338 of the Communications Act). We note that, with respect to cable MVPDs, similar adjustments could be made to the Commission's retransmission consent regime as detailed in proposed legislation offered by Representative Ben Ray Luján during the reauthorization of STELA. *See* Angele A. Gilroy and Lennard G. Kruger, Cong. Research Serv., R43490, Reauthorization of the Satellite Television Extension and Localism Act (STELA) 15 & n.41 (2014) (suggesting modification of the retransmission consent and carriage rules to make delivery of in-state, out-of-market network broadcast signals to underserved consumers in counties adjacent to the market more feasible for MVPDs).

[232] *See supra* para. 87; *In-State Programming Report*, 26 FCC Rcd at 11929, para. 17.

[233] *In-State Programming Report*, 26 FCC Rcd at 11933-34, para. 26. Although these data were collected five years ago as required by STELA, the findings remain applicable to our analysis in this report as there have not been significant changes in the video programming delivery infrastructure.

[234] *Id.* at 11934, para. 27. The Commission limited its analysis to viewership that meets Nielsen's minimum reporting requirements (*i.e.*, in-state stations that attract a viewing audience comprised of at least 2.5 percent of the DMA's households). *Id.*

[235] *Id.* at 11934, para. 28.

[236] SNL Financial, TV Stations by Market and Affiliation (May 2016).

[237] *See also supra* paras 74, 78 (discussing case studies of Hunterdon County, NJ and Sussex County, DE).

[238] *In-State Programming Report*, 26 FCC Rcd at 11933, para. 24.

[239] *Id.*

percent of Minnesota households.[240] Therefore, the *In-State Programming Report* demonstrated that the percentage of households with access to in-state programming is very high while the percentage of households receiving only out-of-state stations is extremely low. For the limited situations in which particular counties, especially in rural areas, may be located in a DMA primarily composed of counties from a different state, we discuss the following recommendations for fostering additional options for local programming and access to in-state signals.

102. *Market Modification*. Broadcasters state that current Commission procedures such as market modification are adequate for addressing in-state programming needs.[241] As discussed above, the Commission has implemented the STELAR to permit DBS providers, commercial broadcast stations, and counties to file satellite market modification petitions.[242] Cable systems and commercial broadcast stations can file cable market modification petitions.[243] The statutory factors for granting a market modification ensure that stations have a local connection to the community to be added to their local market and now include an additional factor that favors any market modification that would promote consumers' access to an in-state station.[244] Accordingly, NAB argues that such targeted mechanisms are preferable for addressing the need for more in-state programming to replacing the DMA system.[245] Some commenters argue that the current market modification process is costly for small, rural cable operators and has a low chance of success.[246] ITTA describes market modifications as a time-consuming and uncertain undertaking that is cost prohibitive for many smaller MVPDs.[247]

103. Given that the market modification procedures offer the ability to alter carriage patterns and potentially secure carriage of an in-state, but formerly out-of-market station in a particular county, those procedures appear to hold great potential for fostering increased localism.[248] The Commission has observed that the purpose of market modification is to permit adjustments to a particular station's local television market (which is initially defined by the DMA in which it is located) to better serve the value of localism by ensuring that consumers receive the broadcast stations most relevant to them.[249]

104. In addition, the Commission has strengthened this localism-oriented purpose by implementing several provisions of the STELAR through the *Satellite Market Modification Order*. Specifically, this Order expands the market modification procedures to satellite carriage of broadcast television stations.[250] The implemented provisions also include the addition of a new factor for consideration in both cable and satellite market modification petitions, which explicitly favors

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[240] *Id.*

[241] NAB Comments at 14; JTNA Reply at 14-15.

[242] *See supra* para. 23.

[243] 47 CFR § 76.59.

[244] 47 U.S.C. § 534(h)(1)(C)(ii)(I)-(V); *Satellite Market Modification Order*, 30 FCC Rcd at 10409, para. 4. The Commission must also consider other relevant information to develop a result that is designed to "better effectuate the purposes" of the law. *See Cable Market Modification Second Report and Order*, 14 FCC Rcd at 8389, para. 53.

[245] NAB Comments at 2.

[246] WTA Comments at 9.

[247] ITTA Reply at 2-3.

[248] *See Chairman Wheeler's Response to Senator Johnson Regarding STELAR Implementation*, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0310/DOC-338173A1.pdf.

[249] *Satellite Market Modification Order*, 30 FCC Rcd at 10409, para. 4.

[250] *Id.* at 10406, para. 1.

modification if the modification will result in an increase in available in-state programming.[251] In requiring the new factor, Congress expressed concern that "many consumers, particularly those who reside in DMAs that cross State lines or cover vast geographic distances," may "lack access to local television programming that is relevant to their everyday lives."[252] This legislative history closely parallels the considerations raised in Section 109 and that Congress has instructed the Commission to take into account when making recommendations on how to foster increased localism in counties served by out-of-state DMAs. Therefore, market modification may have the most potential for fostering increased localism consistent with Congress's concerns. In the *Satellite Market Modification Order*, the Commission observed, however, that "the ability of the market modification rules to successfully address the problem of consumer access to in-state stations will depend in large part on broadcasters' willingness to grant retransmission consent to be carried in the new community and satellite carriers' technical ability to provide the in-state stations in the new community."[253]

105.   Furthermore, in the satellite context, the Commission has also expanded the types of entities that may file a market modification petition by permitting a county governmental entity (such as a county board, council, commission or other equivalent subdivision) to file a satellite market modification petition.[254] This change seeks to empower orphan counties to petition for inclusion of in-state stations.[255] In addition, a county government must also be served with a copy of any satellite market modification petition should another entity initiate such a petition.[256] This notice requirement enables county governments to become aware of such petitions and to potentially support or oppose any market modification affecting their county.[257] As such, it affords counties an opportunity to have an impact on the programming that satellite operators provide to consumers in their area.[258]

106.   The suggestion that greater flexibility in the modification of markets offers a potential solution for counties located in a state different from the core of their DMA is further supported by the fact that, since the Commission adopted the *Satellite Market Modification Order*, government officials have expressed support for the new rules as allowing rural counties to access more in-state programming.[259] In particular, U.S. Senator Michael Bennet, who advocated for the *In-State Programming Report*, has expressed optimism that the new market modification procedures will enable

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[251] *Id.* at 10409, para. 4.

[252] *Id.* at 10420, para. 18 (citing *Senate Commerce Committee Report* at 11).

[253] *Id.* at 10406, para. 1.

[254] *Id.* at 10409, para. 4. Finding that the cable market modification process has worked well for more than twenty years, the Commission did not expand the class of entities that may file a cable market modification petition. *Id.* at 10418, para. 15.

[255] *Id.* at 10416-17, para. 14. The Order observes, however, that station carriage relies in part on business decisions involving broadcasters and satellite carriers and that, without the willing participation of the affected broadcaster, modifying the market of a particular television station, in itself, would not result in consumer access to that station. *Id*.

[256] *Id.* at 10419, para. 16.

[257] *See* 47 CFR § 76.59(b); *Satellite Market Modification Order*, 30 FCC Rcd at 10419, para. 16.

[258] *See id.*

[259] *See, e.g.*, *FCC Finalizes Rule to Allow Four Corners to Request Colorado Broadcast TV* (Feb. 19, 2016), https://www.bennet.senate.gov/?p=release&id=3599; Edward Graham, *Finalized FCC rule puts Denver TV within reach* (Feb. 22, 2016), http://www.cortezjournal.com/article/20160222/NEWS01/160229985/-1/News.

orphan counties in Colorado to receive in-state broadcasts.[260] In response, the Commission has stated that all market modification petitions will be "expeditiously" considered and has expressed confidence that the new procedures will increase opportunities for consumers to receive more in-state broadcast stations of local interest.[261]

107. Regarding cable market modifications, while the Commission has found that the cable market modification process has worked well since being implemented more than 20 years ago,[262] we acknowledge commenters' concerns that the market modification process may be too costly, time-consuming, and uncertain, especially for rural and small cable operators.[263] We note that the evidentiary requirements for market modification are such that petitions have the highest chance for success when the proponents have the aid and cooperation of the station or stations that are subject to the petition.[264] Therefore, we continue to recommend that entities considering market modification work closely with broadcast stations to ensure the standards for market modification are met.[265] Also, Congress could consider future legislation to provide targeted relief for orphan counties located in rural areas.

108. *Carriage of Significantly Viewed Signals and Other Voluntary Agreements for Out-of-Market, In-State Programming*. Broadcasters assert that the Commission's procedure for the carriage of significantly viewed stations is another viable method to increase localism in a manner consistent with Section 109. NAB and DIRECTV argue that encouraging voluntary agreements between MVPDs and broadcasters can address the in-state programming needs of counties located in DMAs composed largely of counties from another state or states. NAB offers that MVPDs can place out-of-market, in-state programming on a low-tier public access channel (so as not to supplant other cable programming), with the only issue being whether MVPDs are willing to do so.[266] NAB cites many instances in which MVPDs import out-of-market, in-state television programming via agreements with broadcasters.[267] DIRECTV also states that the best way to provide more programming options to particular counties is to allow satellite carriers to bring additional programming to subscribers in such counties where technically feasible.[268]

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[260] *See* Peter Marcus, *New rules may open door to Denver TV* (Sept. 8, 2015), http://www.cortezjournal.com/article/20150908/NEWS01/150909838/0/news/New-rules-may-open-door-to-Denver-TV (noting the efforts of U.S. Senators Michael Bennet and Mark Udall in securing provisions in the STELAR); *FCC Finalizes Rule to Allow Four Corners to Request Colorado Broadcast TV* (Feb. 19, 2016), https://www.bennet.senate.gov/?p=release&id=3599 (noting Senator Bennet's efforts in getting the Commission to publish the *In-State Programming Report*).

[261] *Chairman Wheeler's Response to Senator Johnson Regarding STELAR Implementation*, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0310/DOC-338173A1.pdf.

[262] *Satellite Market Modification Order*, 30 FCC Rcd at 10418, para. 15 (observing that the cable market modification process has worked well for more than 20 years).

[263] WTA Comments at 9; ITTA Reply at 2-3.

[264] *See Satellite Market Modification Order*, 30 FCC Rcd at 10417-18, para. 14.

[265] *See id.* at 10406, para. 1.

[266] NAB Comments at 16.

[267] *Id.* at 16 (citing three instances where MVPDs have agreements in place with broadcasters to import out-of-market, in-state television programming). To the extent that MVPDs do not pursue carriage of out-of-market, in-state television stations, NAB attributes this reluctance to the MVPDs' business decisions. *Id.* at 17.

[268] DIRECTV Comments at 3.

109. WTA states that cable operators attempting to negotiate carriage with out-of-market stations often face resistance stemming from provisions in network affiliation agreements.[269] ITTA makes the same point.[270] Furthermore, because retransmission consent is required for the carriage of significantly viewed signals, cable operators state that they often run into the similar problem of network affiliation agreements that prevent carriage of additional stations with the same network affiliation in the same market.[271]

110. Broadcasters maintain in this proceeding that in-market stations would be financially harmed by the importation of out-of-market broadcast programming, unless the programming was limited to locally produced news programming or other non-duplicative programming.[272] Because in-market broadcast stations generally oppose the importation of out-of-market broadcast programming into their own markets, they likewise may not be willing to grant out-of-market MVPDs permission to carry their programming in other markets.[273] Even when in-market and out-of-market broadcast stations can agree to the importation of out-of-market local programming, MVPDs often lack financial incentives to carry the programming.[274] Although some MVPDs carry the locally produced news programming of out-of-market broadcast stations, this arrangement appears to be uncommon.[275] MVPDs contend that allocating a channel and then blocking out all but the locally produced news programming would rarely be profitable, especially when the expected audiences are small.[276]

111. One possible solution could be for MVPDs to obtain consent for carriage of the local programming of several out-of-market stations and aggregate such local programming on a separate channel or channels. This approach would allow an MVPD to use fewer resources by carrying the relevant local programming from a distant, out-of-market station (or stations) on a single designated channel or on a video-on-demand basis, rather than carrying all of a station's programming and facing the need to black out all but the relevant, non-duplicative local programming.

112. *Repeal of Syndicated Exclusivity and Network Non-duplication Rules*. One commenter, ITTA, argues that the Commission should repeal the syndicated exclusivity and network non-duplication rules as a way to foster increased localism.[277] These program exclusivity rules currently require MVPDs to delete duplicative network or syndicated programming carried on any out-of-market signals that an MVPD imports into a local market, where exclusivity provisions exist in the relevant programming

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[269] WTA Comments at 9.

[270] ITTA Reply at 2-3.

[271] WTA Comments at 9; ITTA Reply at 2-3.

[272] *See* NAB Comments at 3-4.

[273] *See id.* at 31. NAB makes the distinction that, while broadcasters oppose the importation of duplicative programming, broadcasters are willing to grant out-of-market carriage rights for non-duplicative programming. *Id.* at 16-17.

[274] WTA Comments at 9. Although DISH did not submit comments in this proceeding, we note that DISH has suggested in the context of the recent market modification proceeding that carriage of two stations with the same network affiliation could result in the MVPD paying retransmission consent fees to two stations. DISH Comments, MB Docket No. 15-71, at 9-10 (May 13, 2015).

[275] NAB Comments at 16.

[276] *But see id*.

[277] ITTA Reply at 3-4.

REBUTTAL TESTIMONY OF CERIL SHAGRIN Ex. D-44

agreements.[278] ITTA argues that the exclusivity rules in effect undermine the Commission's localism interest by blocking competition from out-of-market stations that would enhance the quality of local broadcast programming and the viewing options available to consumers.[279] By contrast, ITTA states, repealing the exclusivity rules would facilitate the importation of out-of-market signals by MVPDs.[280] ITTA argues further that allowing MVPDs to import network and syndicated programming from a station outside the DMA would create more competition among broadcasters to produce compelling local programming.[281]

113. Broadcasters argue that these rules remain necessary for broadcasters to protect the value of their advertising sales and the viability of local stations. NAB asserts that the importation of duplicative out-of-market programming would reduce local stations' audiences and devalue the advertising spots that allow advertisers to reach their intended local customers, thereby resulting in a loss of advertising revenue for local stations.[282] NAB states that allowing MVPDs to import duplicative national network or syndicated programming thus would undermine the economic viability of in-market stations already carrying the same programming.[283] NAB argues this would in turn hamper the in-market stations' ability to produce relevant local programming.[284] ITTA argues that broadcasters no longer depend solely on advertising sales but rather rely on retransmission consent fees as their primary source of revenue.[285] ITTA further asserts that broadcasters' arguments about the repeal of the exclusivity rules undermining localism are disingenuous as competition from out-of-market stations should incentivize local stations to produce better local programming.[286]

114. We find that the record does not establish that repeal of the syndicated exclusivity and network non-duplication rules would reliably increase localism or would have an immediate effect on the increased availability of out-of-market programming.[287] First, the rules do not apply to the signals of significantly viewed stations or to small MVPDs serving less than 1,000 subscribers.[288] Second, as the Commission observed in the *Exclusivity NPRM*, our syndicated exclusivity and network non-duplication rules largely have the effect of providing an additional enforcement mechanism for preexisting agreements. Parties would remain free to include exclusivity provisions in their contracts even in the absence of the Commission's rules enforcing such provisions, as they typically do today.[289] As discussed

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[278] *Amendment of the Commission's Rules Related to Retransmission Consent*, 29 FCC Rcd at 3376, para. 41. MVPDs often will not import out-of-market signals if they are required to black out a significant portion of the programming.

[279] ITTA Reply at 8.

[280] *Id.* at 7.

[281] *Id.* at 8-9.

[282] NAB Comments at 31.

[283] *Id.* at 3-4.

[284] *Id.* at 4.

[285] ITTA Reply at 7.

[286] *Id.* at 8.

[287] We express no view on other possible benefits or potential harms of repealing the rules given the existence of an open proceeding examining the issue. *See infra* note 291 and accompanying text.

[288] *Amendment of the Commission's Rules Related to Retransmission Consent*, 29 FCC Rcd at 3378-79, paras. 44-45.

[289] *See id.* at 3391, para. 66.

earlier, broadcast stations generally oppose the importation of out-of-market broadcast programming into their own markets and are often prohibited by their network affiliation agreements from granting retransmission consent to MVPDs for out-of-market carriage of their signals.[290]

115.   We also note that the Commission has an open proceeding dedicated specifically to the future of the exclusivity rules.[291] To the extent that commenters have advocated the repeal of these rules, their comments are more properly addressed in that proceeding. With respect to fostering increased localism, we cannot conclude based on the limited record in this proceeding that repealing the exclusivity rules would necessarily increase local programming to orphan counties.

116.   *Expand Satellite Carriage Requirements*. Some commenters recommend that the Commission explore mechanisms to encourage or require DBS operators to carry state public television network signals.[292] DIRECTV states that its technical inability to reconfigure its satellites, combined with the limited capacity on its spot beams, is why DIRECTV has largely proven unable to carry statewide networks of public television stations, as Congress permitted it to do.[293] Also, NAB requests that the Commission require DIRECTV to carry local-into-local channels in all 210 DMAs.[294]

117.   We note that most of the comments received concerning this issue focus on one television station in particular, a Wyoming PBS station.[295] Considering the specific nature of the complaint, we find that a targeted solution may be preferable to expanding the carriage requirements of DBS operators nationally. In addition, the newly adopted satellite market modification procedures discussed above enable county officials, presumably at the urging of resident county consumers, to seek modification of the market of a desired station to include additional counties.[296] Although statutory market modification provisions currently pertain only to "commercial" stations and thus exclude noncommercial stations such as PBS affiliates from the scope of market modifications, further expanding the procedures through future

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[290] *See supra* paras. 109-110.

[291] *Comment Period Extended for Further Notice of Proposed Rulemaking on Network Non-Duplication and Syndicated Exclusivity Rules*, Public Notice, 29 FCC Rcd 3925 (MB 2014).

[292] Oregon Public Broad. Comments at 2-4; Ass'n of Public Television Stations and Org. of State Broad. Executives Comments at 7.

[293] DIRECTV Comments at 3-4.

[294] NAB Comments at 5.

[295] *See, e.g.,* Pam Mathewson Comments (May 11, 2015); Bridget Hettgar Comments (May 13, 2015); Craig Blumenshine Comments (May 13, 2015); Celeste Colgan Comments (May 15, 2015); Ralph Horne Comments (May 18, 2015); Christine Warner Comments (May 18, 2015); Connie Baker Comments (May 21, 2015); Sweetwater County Democratic Party Comments (May 26, 2015); Peter Lang Comments (May 26, 2015); Tami Sorenson Comments (May 26, 2015); Cherie Longmuir Comments (May 26, 2015); Linda Valenti Comments (May 28, 2015); Tammy Au-France Comments (June 4, 2015); Kenneth Allison Comments (June 5, 2015); Dean and Linda Lebeda Comments (June 8, 2015); Holly Horton Comments (June 8, 2015); Joe Remick Comments (June 9, 2015); Julius and Erica Muschaweck Comments (June 10, 2015); Katie Peterson Comments (June 10, 2015); Paul Parmelly Comments (June 10, 2015); Walt Lashmett Comments (June 10, 2015); Jenny Williams Comments (June 10, 2015); Frances Tschacher Comments (June 10, 2015); Lee Tschacher Comments (June 10, 2015); Judith King Comments (June 10, 2015); Justin Gulley Comments (June 10, 2015); Algera and Dennis Jensen Comments (June 10, 2015); Dee Krejci Comments (June 10, 2015); C. Robb Comments (June 10, 2015 Lee Ann Stephenson Comments (June 11, 2015); Governor Matthew Mead Comments (June 11, 2015).

[296] We note that such market modifications still must be technically and economically feasible. *Satellite Market Modification Order*, 30 FCC Rcd at 10406, para. 1.

legislation to include noncommercial stations could present a viable path for fostering increased localism.[297]

118.   We note further that any expansion of satellite carriers' statutory carriage requirements would require new legislation. With regard to carriage of state public television networks, we note that changing the permissive carriage of such network stations, as currently provided for in 17 U.S.C. Section 122(a)(4)(E), into a requirement to carry these stations could be achieved only through amending the statute. Also, we note that commenters have not refuted sufficiently DIRECTV's assertions of its technical inability or the Commission's previous findings regarding the inherent limitations of satellite carriage capacity.[298] Both Congress and the Commission have concluded that the carriage requirements of DBS operators should be limited by feasibility.[299] The record of this proceeding provides no reason for us to depart from that conclusion. With regard to NAB's request regarding DIRECTV's carriage of local-into-local stations in all DMAs, new legislation would also be required as satellite providers are not currently required by statute to carry local programming in all 210 DMAs.[300]

119.   The Virgin Islands Public Television System (VIPTS) filed comments requesting that Congress and the Commission reexamine the satellite carriage requirements with regard to the Virgin Islands and other U.S. territories.[301] VIPTS states that its public service mission is frustrated by its inability to require carriage of its local broadcast station on DBS through the "carry one, carry all" requirement.[302] VIPTS states that its situation results from the Commission having interpreted in the implementation of Section 210 of the Satellite Home Viewer Extension and Reauthorization Act of 2004 (SHVERA) that statutory language containing the phrase "State that is not part of the contiguous United States" was not meant to include U.S. noncontiguous territories and possessions.[303] VIPTS also asks that Congress amend copyright law as needed to clarify that the Virgin Islands, and other territories as appropriate, fall within the compulsory copyright license granted to DBS carriers under Section 122 of

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[297] *See id.* at 10406, para. 1, n.2.

[298] *See Carriage of Digital Television Broadcast Signals: Amendment to Part 76 of the Communications Rules; Implementation of the Satellite Home Viewer Improvement Act of 1999: Local Broadcast Signal Carriage Issues and Retransmission Consent Issues*, Second Report and Order, Memorandum Opinion and Order, and Second Further Notice of Proposed Rulemaking, 23 FCC Rcd 5351, 5355, para. 7 (2008) ("We recognize that satellite carriers face unique capacity, uplink, and ground facility construction issues that must be factored into the timing of any HD 'carry-one, carry-all' requirement.").

[299] *See Satellite Market Modification Order*, 30 FCC Rcd at 10406, para. 1 ("Finally, Congress recognized that satellite carriage of additional stations might be technically or economically infeasible in some circumstances. Accordingly, our rules implement this exception to the carriage requirements that would otherwise apply for modified markets.").

[300] *See* 47 U.S.C. § 338. DISH, pursuant to its willing commitment as a "qualified carrier," provides local programming in all 210 DMAs. *See* 17 U.S.C. § 119(g); *Application of DISH Network, LLC for Qualified Carrier Certification*, MB Docket No. 10-124, Order, 25 FCC Rcd 12941 (2010) (*DISH Qualified Carrier Order*). However, in 29 DMAs, DISH is only required to reach at least 90 percent of the households in the market area based on the most recent census data released by the United States Census Bureau. *See* 47 U.S.C. § 342(a)(2)(A); *DISH Qualified Carrier Order*, 25 FCC Rcd at12944-46, paras. 9-13.

[301] Virgin Islands Public Television System (VIPTS) Comments at 4-5.

[302] VIPTS Comments at 3.

[303] VIPTS Comments at 3 (citing *Implementation of Section 210 of the Satellite Home Viewer Extension and Reauthorization Act of 2004 to Amend Section 338 of the Communications Act*, MB Docket No. 05-181, Report and Order, 20 FCC Rcd 14242, 14247, para. 10 (2005) (interpreting statutory language containing the phrase "State that is not part of the contiguous United States" as excluding noncontiguous territories and possessions)).

Title 17 of the United States Code.[304] As with the other proposed expansions of satellite carriage requirements discussed above, VIPTS's requested changes would require new legislation to amend the aforementioned statutes.

120. *Online Access to In-State Programming.* One commenter suggests that technological innovation in the form of online video already has increased consumers' access to local programming, including in-state news and information.[305] NAB states that content accessed via the Internet can "foster increased localism in counties served by [stations licensed to] out-of-State" DMAs, including in rural areas.[306] NAB states that many broadcast stations have embraced the use of websites as an integral part of their core business, and many television stations' websites are becoming popular online sources for local news and information.[307] NAB cites Radio Television Digital News Association (RTDNA) data for the assertion that every television station that provides local news also has a website that provides local news.[308] Furthermore, the RTDNA data also indicate that about 70 percent of local news stations in the top 100 television markets provide live newscasts on their websites.[309] Many televisions stations also utilize social media and mobile applications to enable greater access to their local programming by consumers.[310]

121. We acknowledge that online access to broadcast television offers a method for consumers to potentially access programming from additional television stations outside their market, including access to programming from in-state stations.[311] We note that online video programming distribution is unconstrained by DMA or state boundaries and therefore can be accessed by any consumer residing anywhere with a broadband Internet connection.[312] Thus, it appears that another approach to fostering

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[304] VIPTS Comments at 4-5.

[305] NAB Comments at 17.

[306] *Id.*

[307] *Id.* at 18-19.

[308] *Id.* at 4, 19.

[309] *Id.* at 19.

[310] *Id.* at 20 (citing the RTDNA survey that "[i]n the top 50 markets … about 80 percent of stations responding to the survey indicated that their TV newsrooms 'constantly' use Twitter to provide updated local information and news" and that "nearly 88 percent of TV stations responding to RTDNA's survey reported that they have mobile applications").

[311] In our pending Quadrennial Review proceeding, we have tentatively concluded that the overwhelming majority of consumers continue to rely on broadcast television for local programming. *2014 Quadrennial Regulatory Review – Review of the Commission's Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996*, MB Docket No. 14-50 et al., Further Notice of Proposed Rulemaking and Report and Order, 29 FCC Rcd 4371, 4381-83, paras. 23-25 (2014). To the extent that broadcast programming is made available online, such online video facilitates wider access to broadcast programming and is not a substitute for broadcast television, as broadcast television stations remain the content originator even as the local programming is being accessed online or via mobile applications.

[312] We recognize that the viability of this recommendation relies on the extent to which consumers, particularly those in rural areas, have access to broadband Internet at speeds necessary for viewing video and note that this recommendation is consistent with the Commission's continued goal of accelerating broadband deployment.

increased localism is to encourage broadcast television stations to make their local programming available online or through mobile applications if they do not do so already.[313]

V.   CONCLUSION

122.   We find that, consistent with the *In-State Programming Report*, the overwhelming majority of consumers in the United States are able to access — through both out-of-market and in-market broadcast television stations — programming from television stations licensed to a community located within the same state in which they reside. Based on our analysis and the record of this proceeding, we have not identified a technologically and economically feasible alternative to the current Nielsen DMA system for defining local television markets. We have discussed potential targeted mechanisms that would utilize the existing market definition system to make specific adjustments to foster increased localism in counties served by out-of-state DMAs. Specifically, we note that the market modification provisions, as modified by the STELAR and the Commission's implementing rules, may provide relief responsive to the needs of the relatively few consumers who currently do not have access to in-state programming.

123.   With this Report, the Commission satisfies the obligation pursuant to Section 109 of the STELAR to submit a report to Congress examining consumers' access to broadcast programming from outside of their local DMAs and to make recommendations on how to foster increased localism in counties served by out-of-state DMAs.

FEDERAL COMMUNICATIONS COMMISSION

William T. Lake
Chief, Media Bureau

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[313] In addition to Internet-based, on-demand local programming provided by broadcasters on their websites and mobile applications, MVPDs could also be encouraged to provide local programming through their on-demand offerings as well. *See supra* para. 111.

EXHIBIT E

APPENDIX C

Viewership of Out-of-Market Signals Based on Nielsen Market Data

Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
Alpena, MI	72052	WEYI-TV	NBC	DT	Saginaw, MI	Saginaw County	Flint-Saginaw-Bay City, MI
Alpena, MI	21254	WTOM-TV	NBC	DT	Cheboygan, MI	Cheboygan County	Traverse City-Cadillac, MI
Baltimore, MD	22207	WTTG	FOX	DT	Washington, DC	District of Columbia	Washington, DC (Hagerstown, MD)
		WTTG is considered significantly viewed in the following counties within the Baltimore market:[1] Harford, MD Baltimore, MD Anne Arundel, MD Queen Anne, MD Kent, MD Carroll, MD Caroline County, MD (unincorporated) Howard, MD Queen Anne, MD Caroline, MD Talbot, MD						
Billings, MT	43567	KUSM-TV	PBS	DT	Bozeman, MT	Gallatin County	Butte-Bozeman, MT
Biloxi-Gulfport, MS	71357	WDSU	NBC	DT	New Orleans, LA	Orleans County	New Orleans, LA
		WDSU is significantly viewed in the following counties within the Biloxi-Gulfport market: Harrison, MS						
Biloxi-Gulfport, MS	73187	WKRG-TV	CBS	DT	Mobile, AL	Mobile County	Mobile, AL-Pensacola, FL
		WKRG is considered significantly viewed in the following counties within the Biloxi-Gulfport market: Harrison, MS Jackson, MS Stone, MS						
Bluefield-Beckley, Oak Hill, WV	71280	WCHS-TV	ABC	DT	Charleston, WV	Kanawha County	Charleston-Huntington, WV
		WCHS is considered significantly viewed in the following counties within the Bluefield-Beckley						

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[1] Using the Commission's list of significantly viewed stations (https://www.fcc.gov/mb/), we matched significantly viewed counties with the DMAs to which they are assigned by Nielsen, and cross-referenced to isolate instances where a station appeared as significantly viewed in a county that is part of the distant (non-home) market in which the station is reported by Nielsen to have garnered ratings. In rare instances in which a station is considered significantly viewed in a city or town, as opposed to a county recognized as composing a Nielsen DMA, such observations have been dropped from our analysis.

Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
		market: Raleigh, WV					
Bowling Green, KY	36504	WTVF	CBS	DT	Nashville, TN	Davidson County	Nashville, TN
		WTVF is considered significantly viewed in the following counties within the Bowling Green market: Warren, KY Metcalfe, KY Barren, KY Edmonson, KY Butler, KY Hart, KY					
Cheyenne, WY-Scottsbluff, NE	17683	KDUH-TV	ABC	DT	Scottsbluff, NE	Scotts Bluff County	Rapid City, SD
		KDUH is considered significantly viewed in the following counties within the Cheyenne, WY-Scottsbluff, NE market: Goshen. WY Scotts Bluff, NE					
Cheyenne, WY-Scottsbluff, NE	23074	KUSA	NBC	DT	Denver, CO	Arapahoe County	Denver, CO
		KUSA is considered significantly viewed in the following counties within the Cheyenne, WY-Scottsbluff, NE market: Laramie, WY					
Cheyenne, WY-Scottsbluff, NE	35883	KWGN-TV	CW	DT	Denver, CO	Arapahoe County	Denver, CO
		KWGN is considered significantly viewed in the following counties within the Cheyenne, WY-Scottsbluff, NE market: Laramie, WY					
Davenport, IA-Rock Island-Moline, IL	29095	KIIN	PBS	DT	Iowa City, IA	Johnson County	Cedar Rapids-Waterloo-Iowa City-Dubuque, IA
Elmira (Corning), NY	74034	WSKG-TV	PBS	DT	Binghamton, NY	Broome County	Binghamton, NY
Glendive, MT	47670	KHMT	FOX	DT	Hardin, MT	Big Horn County	Billings, MT
Glendive, MT	5243	KSVI	ABC	DT	Billings, MT	Yellowstone County	Billings, MT
Glendive, MT	41429	KUMV-TV	NBC	DT	Williston, ND	Williams County	Minot-Bismarck-Dickinson, ND
		KUMV is considered significantly viewed in the following counties within the Glendive market: Dawson, MT					
Glendive, MT	43567	KUSM-	PBS	DT	Bozeman, MT	Gallatin	Butte-Bozeman,

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Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
		TV				County	MT
Harrisonburg, VA	47904	WRC-TV	NBC	DT	Washington, DC	District of Columbia	Washington, DC (Hagerstown, MD)
Harrisonburg, VA	22207	WTTG	FOX	DT	Washington, DC	District of Columbia	Washington, DC (Hagerstown, MD)
Harrisonburg, VA	70309	WVIR-TV	NBC	DT	Charlottesville, VA	Albemarle County	Charlottesville, VA
		WVIR is considered significantly viewed in the following counties within the Harrisonburg market: Augusta/ Staunton City/ Waynesboro City, VA Rockingham/ Harrisonburg City, VA					
Helena, MT	34412	KFBB-TV	ABC	DT	Great Falls, MT	Cascade County	Great Falls, MT
		KFBB is considered significantly viewed in the following counties within the Helena market: Broadwater, MT Lewis and Clark, MT					
Helena, MT	43567	KUSM-TV	PBS	DT	Bozeman, MT	Gallatin County	Butte-Bozeman, MT
Jackson, TN	19184	WMC-TV	NBC	DT	Memphis, TN	Shelby County	Memphis, TN
		WMC is considered significantly viewed in the following counties within the Jackson market: Hardin, TN Chester, TN Madison, TN Gibson, TN Henderson, TN					
Jackson, TN	66174	WREG-TV	CBS	DT	Memphis, TN	Shelby County	Memphis, TN
Johnstown-Altoona-State College, PA	69880	WPCW	CW	DT	Jeannette, PA	Westmoreland, County	Pittsburgh, PA
Jonesboro, AR	66174	WREG-TV	CBS	DT	Memphis, TN	Shelby County	Memphis, TN
		WREG is considered significantly viewed in the following counties within the Jonesboro market: Lawrence, AR Craighead, AR Clay, AR Greene, AR					
Juneau, AK	35655	KTBY	FOX	DT	Anchorage, AK	Anchorage County	Anchorage, AK
Lafayette, IN	41397	WFYI	PBS	DT	Indianapolis, IN	Marion County	Indianapolis, IN
Lafayette, IN	39269	WISH-TV	CW	DT	Indianapolis, IN	Marion County	Indianapolis, IN
		WISH is considered significantly viewed in the following counties within the Lafayette market: Tippecanoe, IN					

Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
Lafayette, IN	40877	WRTV	ABC	DT	Indianapolis, IN	Marion County	Indianapolis, IN
		WRTV is considered significantly viewed in the following counties within the Lafayette market: Tippecanoe, IN Benton, IN					
Lafayette, IN	70162	WTHR	NBC	DT	Indianapolis, IN	Marion County	Indianapolis, IN
		WTHR is considered significantly viewed in the following counties within the Lafayette market: Tippecanoe, IN Benton, IN					
Lafayette, IN	56523	WTTV	CBS	DT	Bloomington, IN	Monroe County	Indianapolis, IN
		WTTV is considered significantly viewed in the following counties within the Lafayette market: Tippecanoe, IN Benton, IN					
Lafayette, IN	146	WXIN	FOX	DT	Indianapolis, IN	Marion County	Indianapolis, IN
		WXIN is considered significantly viewed in the following counties within the Lafayette market: Tippecanoe, IN Benton, IN					
Lake Charles, LA	33471	KATC	ABC	DT	Lafayette, LA	Lafayette County	Lafayette, LA
		KATC is considered significantly viewed in the following counties within the Lake Charles market: Beauregard, LA Cameron, LA Allen, LA Calcasieu, LA					
Lake Charles, LA	10150	KBMT	ABC	DT	Beaumont, TX	Jefferson County	Beaumont-Port Arthur, TX
		KBMT is considered significantly viewed in the following counties within the Lake Charles market: Calcasieu, LA Cameron, LA					
Lake Charles, LA	35059	KLFY-TV	CBS	DT	Lafayette, LA	Lafayette County	Lafayette, LA
		KLFY is considered significantly viewed in the following counties within the Lake Charles market: Beauregard, LA Cameron, LA Allen, LA Calcasieu, LA					
Lake Charles, LA	51598	KALB-TV	CBS	DT	Alexandria, LA	Rapides County	Alexandria, LA

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Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
		KALB is considered significantly viewed in the following counties within the Lake Charles market: Beauregard, LA Allen, LA					
Laredo, TX	199355	XHNA	IND-SP	DT	Nuevo Laredo	Mexico	
Laredo, TX	199336	XHNT	IND-SP	DT	Naco	Mexico	
Lima, OH	71217	WBNS	CBS	DT	Columbus, OH	Franklin County	Columbus, OH
Lima, OH	41458	WHIO	CBS	DT	Dayton, OH	Darke County	Dayton, OH
		WHIO is considered significantly viewed in the following counties within the Lima market: Auglaize, OH Allen, OH					
Lima, OH	74150	WTVG	ABC	DT	Toledo, OH	Lucas County	Toledo, OH
		WTVG is considered significantly viewed in the following counties within the Lima market: Putnam, OH Allen, OH					
Mankato, MN	23079	KARE	NBC	DT	Minneapolis, MN	Hennepin County	Minneapolis-St, Paul, MN
		KARE is considered significantly viewed in the following counties within the Mankato market: Brown, MN Watonwan, MN Blue Earth, MN					
Mankato, MN	68883	KMSP-TV	FOX	DT	Minneapolis, MN	Hennepin County	Minneapolis-St, Paul, MN
		KMSP is considered significantly viewed in the following counties within the Mankato market: Brown, MN Blue Earth, MN					
Mankato, MN	28010	KSTP-TV	ABC	DT	St. Paul, MN	Ramsey County	Minneapolis-St, Paul, MN
		KSTP is considered significantly viewed in the following counties within the Mankato market: Brown, MN Watonwan, MN Blue Earth, MN					
Mankato, MN	68594	KTCA-TV	PBS	DT	St. Paul, MN	Ramsey County	Minneapolis-St, Paul, MN

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Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
Mankato, MN	9629	WCCO-TV	CBS	DT	Minneapolis, MN	Hennepin County	Minneapolis-St, Paul, MN
		WCCO is considered significantly viewed in the following counties within the Mankato market: Brown, MN Watonwan, MN Blue Earth, MN					
Monterey-Salinas, CA	35500	KQED	PBS	DT	San Francisco, CA	San Francisco County	San Francisco-Oakland-San Jose, CA
North Platte, NE	21160	KHGI	ABC	DT	Kearney, NE	Buffalo County	Lincoln-Hastings-Kearney, NE
		KHGI is considered significantly viewed in the following counties within the North Platte market: Logan, NE McPherson, NE Lincoln, NE					
Ottumwa, IA-Kirksville, MO	33710	KCCI	CBS	DT	Des Moines, IA	Polk County	Des Moines-Ames, IA
		KCCI is considered significantly viewed in the following counties within the Ottumwa, IA-Kirksville, MO market: Davis, IA Wapello, IA					
Ottumwa, IA-Kirksville, MO	29095	KIIN	PBS	DT	Iowa City, IA	Johnson County	Cedar Rapids-Waterloo, IA
Ottumwa, IA-Kirksville, MO	59444	KSHB-TV	NBC	DT	Kansas City, MO	Jackson County	Kansas City, MO
Ottumwa, IA-Kirksville, MO	66221	WHO	NBC	DT	Des Moines, IA	Polk County	Des Moines-Ames, IA
Palms Springs, CA	4328	KOCE-TV	PBS	DT	Huntington Beach, CA	Orange County	Los Angeles, CA
Parkersburg, WV	71280	WCHS-TV	ABC	DT	Charlestown, WV	Kanawha County	Charlestown-Huntington, WV
		WCHS is considered significantly viewed in the following counties within the Parkersburg market: Washington, OH Pleasants, WV					

Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
		Wood, WV					
Parkersburg, WV	23342	WOWK-TV	CBS	DT	Huntington, WV	Cabell County	Charlestown-Huntington, WV
		WCHS is considered significantly viewed in the following counties within the Parkersburg market: Washington, OH Wood, WV					
Parkersburg, WV	36912	WSAZ-TV	NBC	DT	Huntington, WV	Cabell County	Charleston-Huntington, WV
		WSAZ is considered significantly viewed in the following counties within the Parkersburg market: Washington, OH Wood, WV					
Parkersburg, WV	56549	WSYX	ABC	DT	Columbus, OH	Franklin County	Columbus, OH
Parkersburg, WV	417	WVAH-TV	FOX	DT	Charleston, WV	Kanawha County	Charleston-Huntington, WV
		WVAH is considered significantly viewed in the following counties within the Parkersburg market: Washington, OH Pleasants, WV Wood, WV					
Presque Isle, ME	39644	WLBZ	NBC	DT	Bangor, ME	Penobscot County	Bangor, ME
Presque Isle, ME	3667	WVII-TV	ABC	DT	Bangor, ME	Penobscot County	Bangor, ME
Providence, RI-New Bedford, MA	25456	WBZ-TV	CBS	DT	Boston, MA	Suffolk County	Boston, MA
		WBZ is considered significantly viewed in the following counties within the Providence, RI-New Bedford, MA market: Bristol, RI Providence, RI Bristol, MA					
Providence, RI-New Bedford, MA	65684	WCVB-TV	ABC	DT	Boston, MA	Suffolk County	Boston, MA
		WCVB is considered significantly viewed in the following counties within the Providence, RI-New Bedford, MA market:					

REBUTTAL TESTIMONY OF CERIL SHAGRIN   Ex. E-7

Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
		Kent, RI Providence, RI Bristol, MA					
Providence, RI-New Bedford, MA	72099	WGBH-TV	PBS	DT	Boston, MA	Suffolk County	Boston, MA
Providence, RI-New Bedford, MA	72098	WGBX-TV	PBS	DT	Boston, MA	Suffolk County	Boston, MA
Providence, RI-New Bedford, MA	72145	WHDH	NBC	DT	Boston, MA	Suffolk County	Boston, MA
		WSBK is considered significantly viewed in the following counties within the Providence, RI-New Bedford, MA market: Kent, RI Providence, RI Bristol, MA Newport, RI Bristol, RI					
Providence, RI-New Bedford, MA	73982	WSBK-TV	IND	DT	Boston, MA	Suffolk County	Boston, MA
		WSBK is considered significantly viewed in the following counties within the Providence, RI-New Bedford, MA market: Kent, RI Providence, RI Bristol, MA Newport, RI					
Salisbury, MD	65696	WBAL-TV	NBC	DT	Baltimore, MD	Baltimore City	Baltimore, MD
		WBAL is considered significantly viewed in the following counties within the Salisbury market: Sussex, DE Wicomico, MD Dorchester, MD					
Salisbury, MD	65942	WMPT	PBS	DT	Annapolis, MD	Anne Arundel County	Baltimore, MD
Springfield-Holyoke, MA	73982	WSBK-TV	IND	DT	Boston, MA	Suffolk County	Boston, MA
St. Joseph, MO	53843	KCPT	PBS	DT	Kansas City, MO	Jackson County	Kansas City, MO
St. Joseph,	41230	KCTV	CBS	DT	Kansas City,	Jackson	Kansas City, MO

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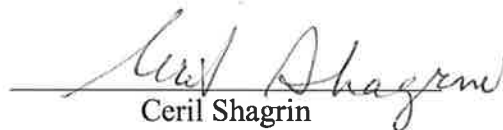| Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
MO					MO	County	
		KCTV is considered significantly viewed in the following counties within the St. Joseph market: De Kalb, MO Buchanan, MO Andrew, MO Doniphan, KS					
St. Joseph, MO	65686	KMBC-TV	ABC	DT	Kansas City, MO	Jackson County	Kansas City, MO
		KMBC is considered significantly viewed in the following counties within the St. Joseph market: De Kalb, MO Buchanan, MO Andrew, MO Doniphan, KS					
St. Joseph, MO	59444	KSHB-TV	NBC	DT	Kansas City, MO	Jackson County	Kansas City, MO
St. Joseph, MO	11291	WDAF-TV	FOX	DT	Kansas City, MO	Jackson County	Kansas City, MO
		WDAF is considered significantly viewed in the following counties within the St. Joseph market: De Kalb, MO Buchanan, MO Andrew, MO Doniphan, KS					
Utica, NY	23337	WBNG-TV	CBS	DT	Binghamton, NY	Broome County	Binghamton, NY
		WBNG is considered significantly viewed in the following counties within the Utica market: Otsego, NY					
Utica, NY	53734	WCNY-TV	PBS	DT	Syracuse, NY	Onondaga County	Syracuse, NY
Utica, NY	74151	WTVH	CBS	DT	Syracuse, NY	Onondaga County	Syracuse, NY
		WTVH is considered significantly viewed in the following counties within the Utica market: Otsego, NY Oneida East, NY Herkimer, NY					
Victoria, TX	26304	KENS	CBS	DT	San Antonio, TX	Bexar County	San Antonio, TX

Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
		KENS is considered significantly viewed in the following counties within the Victoria market: Victoria, TX					
Washington, DC (Hagerstown, MD)	65942	WMPT	PBS	DT	Annapolis, MD	Anne Arundel County	Baltimore, MD
Watertown, NY	57476	WPTZ	NBC	DT	North Pole, NY	Essex County	Burlington-Plattsburgh, NY
		WPTZ is considered significantly viewed in the following counties within the Watertown market: St. Lawrence, NY					
Watertown, NY	21252	WSTM	NBC	DT	Syracuse, NY	Onondaga County	Syracuse, NY
		WSTM is considered significantly viewed in the following counties within the Watertown market: Lewis, NY Jefferson, NY					
West Palm Beach-Ft. Pierce, FL	14356	WPBT	PBS	DT	Miami, FL	Miami-Dade County	Miami-Ft. Lauderdale, FL
Wheeling, WV-Steubenville, OH	25454	KDKA-TV	CBS	DT	Pittsburgh, PA	Allegany County	Pittsburgh, PA
		KDKA is considered significantly viewed in the following counties within the Wheeling, WV-Steubenville, OH market: Hancock, WV Belmont, OH Wetzel, WV Ohio, WV Brooke, WV Marshall, WV Harrison, OH Jefferson, OH					
Wheeling, WV-Steubenville, OH	65681	WTAE-TV	ABC	DT	Pittsburgh, PA	Allegany County	Pittsburgh, PA
		WTAE-TV is considered significantly viewed in the following counties within the Wheeling, WV-Steubenville, OH market: Hancock, WV Belmont, OH Wetzel, WV Ohio, WV					

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Distant DMA In Which Station is Reported	Facility ID	Station's Call Sign	Station's Network Affiliation	Type Service	Station's City, State of License	Station's County	Station's Assigned DMA
		Brooke, WV Marshall, WV Harrison, OH Jefferson, OH Monroe, OH					
Youngstown, OH	25454	KDKA-TV	CBS	DT	Pittsburgh, PA	Allegany County	Pittsburgh, PA
Zanesville, OH	71217	WBNS	CBS	DT	Columbus, OH	Franklin County	Columbus, OH
		WBNS is considered significantly viewed in the following counties within the Zanesville market: Muskingum, OH					
Zanesville, OH	50781	WCMH-TV	NBC	DT	Columbus, OH	Franklin County	Columbus, OH
		WCMH is considered significantly viewed in the following counties within the Zanesville market: Muskingum, OH					
Zanesville, OH	66185	WOSU	PBS	DT	Columbus, OH	Franklin County	Columbus, OH
Zanesville, OH	56549	WSYX	ABC	DT	Columbus, OH	Franklin County	Columbus, OH
		WSYX is considered significantly viewed in the following counties within the Zanesville market: Muskingum, OH					
Zanesville, OH	74137	WTTE	FOX	DT	Columbus, OH	Franklin County	Columbus, OH
		WTTE is considered significantly viewed in the following counties within the Zanesville market: Muskingum, OH					

DECLARATION OF CERIL SHAGRIN

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 2/12/18

_____
Ceril Shagrin

Before the
COPYRIGHT ROYALTY JUDGES
Washington, D.C.

_____	)	
In the Matter of	)	
	)	**CONSOLIDATED PROCEEDING**
Distribution of Cable Royalty Funds	)	No. 14-CRB-0010-CD (2010-13)
_____	)	

Rebuttal Testimony of
Ceril Shagrin

September 15, 2017

<u>Amended February 12, 2018</u>

STATEMENT OF CERIL SHAGRIN

1.   My name is Ceril Shagrin. I have been asked by counsel for the Commercial Television Claimants to provide rebuttal testimony in this proceeding regarding the viewing study presented by Dr. Jeffrey Gray on behalf of the "Program Suppliers" claimants.

A.   Background and Experience

2.   I am currently a consultant on audience measurement issues, having retired earlier this year from my position as Executive Vice President for Corporate Audience Measurement Innovation and Analytics at Univision Communications Inc. I worked for Univision for just over 18 years. Univision is a Spanish-language multimedia company, which owns and operates numerous broadcast, cable and digital networks, television broadcast stations, radio stations, and programming and other content production and distribution operations. At Univision, I was responsible for defining the strategic direction for all audience, programming and marketing research for Univision's television networks and station groups.

3.   Before joining Univision, I began my career at Nielsen Media Research. I ultimately served as Senior Vice President of Market Development at Nielsen, after working for nearly 27 years in all phases of Nielsen's audience measurement operations. I was actively involved in the development of Nielsen's data collection techniques, and was the primary participant in the development and rollout of the National People Meter Service. I pioneered the development of Nielsen's measurement of non-traditional media such as place-based media and out-of-home viewing. During my years at Nielsen, I was also the principal developer of the Nielsen Hispanic Service, which I managed for 10 years.

4.   I have been an active member of the Media Rating Council, where I chaired the Council's Television Committee and served as a member of the Executive Committee. MRC was formed in the 1960's to improve the validity, reliability, and effectiveness of audience

measurement by ratings services, and pursues its mission through the adoption of minimum standards and conducting audits of compliance with those standards. MRC undertakes in-depth reviews of various audience measurement services offered by Nielsen and other measurement companies, and issues accreditations to services that meet MRC's standards.

5.   I have also been an active member of the Interactive Advertising Bureau Research Committee and of the National Association of Broadcasters' Committee on Local Television Audience Measurement (COLTAM). COLTAM addresses important issues concerning the quality of the research products and services that are available to local television stations. The Committee engages the ratings services in a constant dialogue about the methods and practices used to produce their local audience estimates, and takes actions aimed at providing the local broadcast television industry with research of the highest possible quality.

6.   I have also served during 2010-2013 as Chair of the Council on for Research Excellence, which was funded by Nielsen. I chaired CRE's Sample Quality Committee, and currently serve on CRE's Local Measurement Committee, Big Data Committee, and Data Quality Committee, among others. The mission of the CRE is to advance the knowledge and practice of methodological research on audience measurement through active collaboration between Nielsen and its clients.

7.   I testified before two Congressional Committees. In 2005, I testified before the Senate Committee on Commerce, Science, and Transportation. The hearing explored whether proposed legislation could remedy concerns that Nielsen's new Local People Meter technology produced biased audience measurements that underrepresented minority populations. My testimony stressed the importance of MRC audits to ensure that Nielsen's Local People Meter

data was based on a proper sample. Additionally, I served on the committee which monitored the performance of Local People Meters and evaluated the improvements needed.

8. I also testified before the House Committee on Oversight and Government Reform in 2009 regarding the reliability of an electronic audience measurement tool for radio, the Arbitron Portable People Meter. I testified about problems with the sampling frame, sample size, and other sample techniques Arbitron (the principal source for radio audience data) used in its Portable People Meter that disproportionately affected minority owned-stations and minority listeners. Again, I testified about the importance of MRC audits, and I served on the committee that monitored and evaluated the Portable People Meter measurement improvements.

B. Dr. Gray's Study

9. I have reviewed the Amended and Corrected Testimony of Jeffrey S. Gray, Ph.D. submitted on April 3, 2017 ("Gray"), and the Testimony of Paul B. Lindstrom, which I understand was submitted on December 22, 2016 ("Lindstrom"). I have also reviewed the confidential Nielsen National Reference Supplements covering 2010-2013, which I am advised were produced in discovery. I have now reviewed the further corrected Testimony of Jeffrey S. Gray, Ph.D., which I understand was submitted on January 22, 2018 ("Amended Gray").

10. As I understand it, Dr. Gray undertook to measure the relative amount of viewing to several different groups of programs in cable households, only where the programs were received on television stations that were distant signals (i.e., out-of-market signals) in the communities of the measured households. Gray ¶¶ 30, 38. I further understand that Dr. Gray extracted a sample of the distant signal stations in each year from 2010 through 2013 and that Mr. Lindstrom was provided with lists of those sample stations and data about their programs, along with lists of counties in which each of the sample stations was "local" (i.e., not a distant

signal). Gray ¶ 30; Lindstrom p. 4. Nielsen then provided Dr. Gray with data that reported viewing in cable households, if any, for each quarter hour on each of the sample stations, separated between viewing in cable households where the station was local and viewing in cable households where the station was distant. Lindstrom pp. 4-5; Gray ¶ 26.

11.   I understand that all of the viewing data provided by Nielsen to Dr. Gray for the list of stations Dr. Gray specified[1] was collected in cable households included in Nielsen's National People Meter Sample and that in Amended Gray, Dr. Gray used ~~unweighted~~weighted household ~~viewing~~ counts rather than the weighted ~~household~~ viewing data normally used by Nielsen in its standard audience reports.

12.   My testimony is not directed to whether viewing shares among distant signal programs is in general a proper method to determine relative market value of the distant signal program types. Instead, I address the questions of whether the particular viewing study presented by Dr. Gray is valid – meaning that it measures what it claims to measure – and whether it is reliable – meaning that if repeated it would produce consistent results.

C.   Analysis and Opinion

13.   It is my opinion, based on my review of the materials identified above and my understanding of the methodology used by Dr. Gray, that Dr. Gray's study does not provide a valid or reliable measure of the actual relative amounts of viewing to the identified groups of programs in distant cable households in 2010-2013.

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[1]   I understand that another CTV witness will demonstrate that of the slightly over 150 sample stations in each year, no data at all were provided for 8 stations in 2010, 5 stations in 2011, 6 stations in 2012, and 5 stations in 2013.

(a) Nielsen Viewing Data

14. First, it is important to understand that although viewing data reported in a number of Nielsen's well-known audience measurement services are valid, reliable, and effective (and are therefore MRC-accredited), the custom analyses performed for use in Dr. Gray's study do not meet those standards. Nor are the viewing numbers used by Dr. Gray anything like the "Nielsen ratings" that are so widely used and accepted in the broadcast industry.

15. I am familiar, through my long experience at Nielsen and Univision and in industry research associations, with the television industry's uses of audience measurement data for the sale of advertising time. Advertising sales, in either the national or local market, are based on ratings data in the relevant market. Dr. Gray's viewing numbers do not represent ratings, and cannot be converted to ratings.[2] Moreover, given that the viewing numbers he collects are limited to viewing of programs on distant signals, which by definition are outside each station's home market, the particular viewing he analyzes would not be the basis for advertising sales in the television marketplace. Typically, advertisers who buy advertising time in the local market would prefer local stations, which offer complete coverage of the market and higher ratings, and advertisers interested in national ad exposure would buy time on national networks or nationally syndicated programs. And even if Dr. Gray's numbers could be expressed as ratings and were correct, which I do not believe they are, they are expressed in

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[2] Ratings are measures of the percentage of people within a market who have access to a program who actually watched the show. So a "2" rating in the Washington market means that 2% of all the households with television sets in the Washington DMA watched the particular program. My understanding of Dr. Gray's estimated viewing numbers is that they are based just on aggregated distant household viewing instances, as projected by Dr. Gray.

terms of household data, not the "persons" ratings data (e.g., "female age 18-49") that are typically bought and sold in the television advertising marketplace.

16.   When Dr. Gray states that "Nielsen is a well-regarded and highly-used source of audience measurement information in the television industry," I believe he is referring to the MRC-accredited ratings services that Nielsen provides. But the custom analyses Nielsen performed here for Dr. Gray are not accredited. The methodology has not been audited to verify that the procedures were valid and correctly implemented, but a number of serious problems are evident from the limited material that has already been provided. For example, all Nielsen reports that are accredited are based on a representative sample, adjusted by weights to account for differences in cooperation rates, which is not the case for the data as used by Dr. Gray.

(b) Sample Problems

17.   The sample is the foundation on which research is built. A representative sample is critical to valid, actionable estimates. To be useful, a sample must be drawn with the objective of representing the population that is the target of the research.

i.   Meter Household Sample Problems

18.   If a sample of cable television households were being designed to provide valid and reliable estimates of viewing to certain programs on distant (out of market) television signals, it would not be Nielsen's National People Meter ("NPM") Sample.

19.   The NPM Sample is carefully designed and maintained to measure ratings of <u>nationally</u> <u>distributed</u> <u>programs</u> among all US television households ("TVHHs"). Designing a proper study of relative viewing to distant signal programs, which are not distributed evenly throughout the country, would require a different sample selection and different weighting in order to provide reliable audience estimates.

20.   A key difference is that distant signals are more prevalent in smaller markets than in the nation's largest markets. Exhibit A, which was prepared by CTV witness Dr. Chris Bennett, shows the relative numbers of distant signals and local stations carried in cable communities in 2010-2013, grouped by the size of the DMAs in which the cable communities are located. Exhibit B, also prepared by Dr. Bennett, shows that the cable communities with the largest number of local signals (generally the largest DMAs) generally have lower numbers of distant signals. Based on these analyses, it is clear that more distant signals were carried to cable subscribers in smaller markets than in larger markets in 2010-2013.

21.   The FCC actually did a study of out of market viewing, as part of a Report it issued in June 2016 in response to a Congressional mandate to provide information on the availability of out-of-market television stations. Exhibit D is a copy of the Report. Among the data analyses the FCC performed was an analysis of Nielsen local market reports (i.e., reports of viewing within each DMA) to find reported viewing to distant stations (i.e., stations from other DMAs). The analysis is explained in Paragraphs 32 and 58-61 of the Report. Exhibit E is a copy of Appendix C to the Report, in which the FCC lists all of the instances in which viewing from out of market signals was reported by Nielsen.[3] As the FCC notes, more distant stations were typically viewed in "smaller DMAs with fewer local, in-market signals."[4] And Exhibit C, prepared by Dr. Bennett based on Exhibit E, shows the number of DMAs and out of market

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[3]   As the FCC explains in its Report, it analyzed data only for the month of November 2015. It also explains that Nielsen's local market reports include distant signals only if they meet a 9.5 "cume" threshold (i.e., 9.5% of the market's television households watched at least one quarter-hour of any programming on the station during an average week). The FCC notes that this may underrepresent the total number of distant signals being viewed in various markets, but Appendix C reports all distant signal viewing that met Nielsen's own established thresholds for reportability.

[4]   Exhibit D at para. 60.

signals that had any reportable viewing at all (in the November 2015 local market reports), arranged in descending order of DMA size. Again, it is clear that out of market signal viewing is more prevalent in the very smallest DMAs. A sample properly designed to measure distant signal viewing would necessarily take that factor into account.

22.   The NPM sample, by contrast, is designed to measure viewing to nationally distributed programming across all US TVHHs. At one end of the spectrum, the sample contains substantially more households from the largest DMAs (such as New York, Los Angeles, and Chicago), and at the other end, far fewer households – and in some cases no NPM households at all – are recruited in the smallest DMAs. Given the higher incidence of distant signal carriage and distant signal viewing in the smaller DMAs, a study that uses the NPM sample would not be expected to measure distant signal viewing accurately, or even to pick up a significant portion of distant signal viewing. Measuring only distant signal viewing is in one way like measuring viewing of Spanish-language programming. In order to produce a sample that will provide a valid measure of either, there is a need to focus on the characteristics of the populations of interest and the distribution of the programming of interest in the sample design.

23.   Along the same lines, the NPM sample households in any DMA are not sufficient to provide valid ratings data for their local market. For measuring local market viewing, which requires more extensive coverage of station schedules as well as many programs that are not nationally distributed, Nielsen chooses a larger sample of households, for both Local People Meter markets and for Diary markets. Indeed, the FCC's Study used data from these larger-sample local market reports to find and identify distant signal viewing in 2015.

24.   The NPM sample, which was well designed for a specific and different purpose, simply can't do the job of validly measuring distant signal viewing.

ii. Station Sample Problems

25. Even if using the NPM Sample were appropriate for measuring distant signal viewing, Dr. Gray used viewing data only for a sample of the distant signals. As with Nielsen's selection of a sample of households, the validity and reliability of data reported by Dr. Gray for a sample of stations would depend on whether the sample was properly drawn, whether it proportionately represents the populations of interest (in this case all distant signal programming), and if necessary whether (as discussed in the next section) the reported data are weighted properly to account for any over- or under-representation. I understand that CTV witness Dr. Bennett will present an analysis of whether Dr. Gray's station sample was properly selected and weighted.

(c) Weighting Problems

26. Weighting is absolutely critical to the validity and reliability of the NTI reports based on the National People Meter Sample households. Nielsen applies these weights to counteract sampling error, by comparing the in-tab households (i.e., those providing usable information that can be included in the particular viewing report) with the Universe Estimate and weighting the in-tab households to make them match, and therefore proportionately represent, the universe being measured.

27. Weighting factors applied by Nielsen to its NPM household data may number 20 or more per household, and include market/sample size, cable status, age, race, education, household size, languages spoken, presence of children, and more. Nielsen's weighting of each NPM Sample household may be changed on a daily basis, depending on whether the households being measured each day match the characteristics of the population they are being used to

represent. Without this complex and careful weighting, the reported viewing data for the sample cannot be considered as accurately representing the viewing of the sampled population.

28.   Dr. Gray's aggregation in his initial testimony of raw household viewing observations, without including their Nielsen weights, would not produce a valid measure of national viewing, even if the NPM Sample adequately represented the relevant universe of distant signal viewing. I understand that Dr. Gray weighted the household viewing data based on the chances of selection of each station in his sample, but that does not address or cure the problem of ignoring the Nielsen household weights. I further understand that Amended Gray now uses Nielsen-weighted household counts (though not the Nielsen-weighted measures of the actual amounts of viewing reported in those households). While it is proper not to ignore the Nielsen household weights, this change still would not produce a valid measure of relative distant signal viewing. Nielsen determines the weight for each household each day by carefully comparing the characteristics of the household with the characteristics it is intended to represent in the Universe Estimates (i.e., the population being measured – all US TV Households). In order for the household weights to be proper in Amended Gray, it would be necessary to make a similar but separate comparison of each household's characteristics to those of the relevant universe – all cable households that receive distant signals. Having failed to do so, Dr. Gray still does not present a valid measure of distant signal viewing.

D.   **Conclusion**

29.   Based on the fundamental methodological flaws in his study, and based on my experience in audience measurement, it is my opinion that the analysis conducted by Dr. Gray

cannot be relied upon as a valid or reliable measure of actual distant signal viewing in 2010-2013.

Certificate of Service

I hereby certify that on Monday, February 12, 2018 I provided a true and correct copy of the Amendments to Allocation Phase Rebuttal Case Of The Commercial Television Claimants to the following:

National Public Radio, Inc. (NPR), represented by Gregory A Lewis served via Electronic Service at glewis@npr.org

Broadcast Music, Inc. (BMI), represented by Jennifer T. Criss served via Electronic Service at jennifer.criss@dbr.com

Canadian Claimants Group, represented by Victor J Cosentino served via Electronic Service at victor.cosentino@larsongaston.com

Joint Sports Claimants, represented by Michael E Kientzle served via Electronic Service at michael.kientzle@apks.com

American Society of Composers, Authors and Publishers (ASCAP), represented by Sam Mosenkis served via Electronic Service at smosenkis@ascap.com

Spanish Language Producers, represented by Brian D Boydston served via Electronic Service at brianb@ix.netcom.com

SESAC, Inc., represented by Christos P Badavas served via Electronic Service at cbadavas@sesac.com

Devotional Claimants, represented by Benjamin S Sternberg served via Electronic Service at ben@lutzker.com

MPAA-represented Program Suppliers, represented by Alesha M Dominique served via Electronic Service at amd@msk.com

Public Broadcasting Service (PBS), represented by Lindsey L. Tonsager served via Electronic Service at ltonsager@cov.com

Multigroup Claimants, represented by Brian D Boydston served via Electronic Service at brianb@ix.netcom.com

Signed: /s/ John Stewart